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GAS JOURNAL

LIGHT ✦ HEAT ✦ POWER ✦ BYE-PRODUCTS

[Founded in 1849 as the "Journal of Gas Lighting."]

VOL. CLXXI. No. 3244.] LONDON, JULY 15, 1925. [77TH YEAR. PRICE 1s.

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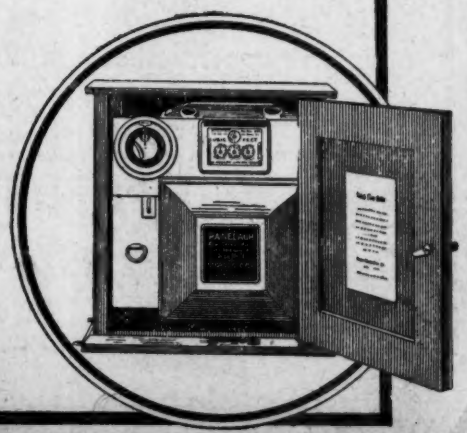

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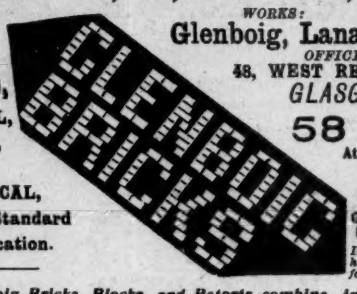

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VOL. CLXXI., No. 3244.] WEDNESDAY, JULY 15, 1925. [77TH YEAR.

EDITORIAL NOTES.

A Period of Gas Wages Stabilization.

We learn that, as the result of the conferences which have taken place between the employers' and workers' sides of the National Joint Industrial Council for the Gas Industry, an agreement has been arrived at for the stabilization of present rates of wages and conditions until the end of December. The National and Regional Councils will continue to operate and function as heretofore. The agreement will, at any rate, enable a better view to be obtained of the conditions of the industry in the changed circumstances which have come upon it, and which have necessitated in most gas-supply areas an increase in the price of gas. Moreover, with the immediately threatening outside industrial troubles, no one can say what is likely to happen to the economic situation of the industry. But we are hoping for the best. Meantime, it is essential that all within the industry should stand shoulder to shoulder.

The Coal Crisis.

At the end of last week, no good results had issued from the mediation of the Government with the view of bringing the coal owners and miners together to resume negotiations. The First Lord of the Admiralty (Mr. Bridgeman) is, owing to the knowledge gained through his old association with the Mines Department, acting for the Government; and last week he worked hard in the effort to link-up the parties again in the hope that they would find a way out of the *cul de sac* into which the negotiations had drifted. The coal owners were quite willing to meet the representatives of the Miners' Federation, and to take up the negotiations where they were suspended when the deadlock came; but they were not prepared to assent to the withdrawal of the notice to terminate the existing agreement. The miners' representatives, however, would not meet the owners, unless they did withdraw the notice, and so there could be no fresh movement. If the miners' representatives were really desirous to leave nothing undone which could be done to realize agreement so as to save the industry from a greater disaster, they would not have insisted upon the condition as to withdrawal of the notice. The owners know that the May returns are worse than ever, and that those for June are not promising. It has come to this, that it is no use the industry going on as now. If an agreement could be reached, the existence of the notice would not make the slightest difference; if one cannot be arrived at, the notice may just as well stand. That is the position. The refusal to go on with the notice in existence is all of a piece with the stubborn attitude of the Federation in all their dealings with the owners.

Of course, the owners—not the economic conditions of the industry—are being blamed in trade-union circles for what is happening; and from the same circles efforts are being most assiduously made to cultivate public opinion in favour of the miners, masses of whom, according to the Bishop of Durham, do not know what all the trouble is about, and simply follow without question the commands of their leaders, the extremists among whom have the greatest power. It is a pitiful condition of things that a handful of men should rule so many, and that that same handful should have the power to produce disaster not only for their following but for the nation. The Miners' Federation have not had any difficulty in winning over to their side the General Council of the Trades Union Congress, who have promised to co-operate wholeheartedly with them in "their resistance to the degradation of the standard of living of their members." The Council do not tell the public why they consider there is any good in offering resistance to the so-called "degradation" of the standard of living when there is nothing left in the industry to support it. What the public want to know is how the economic conditions of the industry can be improved so that the position will be better for all concerned. Instead of in the circumstances talking in such a ridiculous strain regarding the degradation of the standard of living, the Council of the Trades Union Congress had far better devote their attention to ascertaining what has brought the industry to its present pass, and whether it is possible so to improve matters that production costs will be lowered and economic conditions raised to a level at which the industry can compete with other countries. If the Council can effect a change in that direction, they will be doing far more good than they will do if they talk to Doomsday in such a sloppy manner of the degradation of the standard of living. When it became known that the parties could not be brought into contact so as to resume negotiations, the Government were urged to press forward, and get the dispute before an Industrial Court of Inquiry. Therefore, at the beginning of this week, the Government set-up a Court of Inquiry, the members of which are Mr. H. P. Macmillan, K.C. (Chairman), Mr. W. Sherwood, and Sir Josiah Stamp. One other matter which transpired last week is that the Government are not prepared to provide a subsidy for the coal industry.

Among large coal buyers there has been great activity in preparing for the worst; but it is still hoped, though the prospects do not appear particularly good, that some way will be found to avoid such a catastrophe to the country as another coal stoppage.

British Products and British Workers.

"Buy British goods!" That was an appeal the Premier made in the recent big unemployment debate in the House of Commons; and the President of the Board of Trade (Sir Philip Cunliffe-Lister) very deliberately urged the same thing when giving an account, on Monday of last week, of British trade during the past year. Sir Philip made an appeal to "the whole of the British people" to patronize their own wares. He made no exceptions. The "whole of the British people" include the Government, the Ministry of Transport, highway authorities, road surveyors, and so on. No one is omitted from the term. Everything that is imported and purchased when a home-produced article can be bought and applied is doing an injury to the country and to its workers. In this respect the minds of the Prime Minister and the President of the Board of Trade are running in the same groove; and they want the minds of all patriots to have coincidence with their own. The former made his appeal on the ground of unemployment; the latter because the purchase of British instead of imported goods would help to redress the present adverse balance of British trade. The two things run together. Comparative figures given by Sir Philip are arresting and alarming. Last year imports exceeded exports by £395,000,000, whereas in 1913 the excess was £158,000,000—a difference of £237,000,000. Included in that prodigious excess amount

for imports is something for bitumen; while Nature intended British tar from British coals for British roads. There has been occasion to say a good deal of late regarding the advocacy in influential quarters of bitumen instead of tar, for reasons which, when the history of the employment of tar for roads is examined, are found to be very hollow.

The Parliamentary Labour Party is the second largest element in the constitution of the House of Commons; and they ought to be among the strongest of the supporters of the appeal by the President of the Board of Trade. In fact, we would go a step farther. The gas workers of the country, in our opinion, should take a very live interest in political movements affecting the interests of the industry which gives them employment. The miners and the men in other industries take care that their representatives in Parliament are heard. Tar is produced by the coal carbonizing industries, chief among which is the gas industry. Therefore gas workers—and miners, too, for the matter of that—should see to it that, when an imported article like bitumen comes in to take the place of tar, and there is advocacy of this in high places, their representatives in Parliament should be heard on the subject. When, too, the Government propose preferential consideration for the electricity industry for reasons which will not stand expert exploration, the representatives of the gas workers should be heard in opposition. The employment of gas workers should be a matter of very close concern to them; and they should see to it that no effort is spared on their part to help to protect the trading interests of the industry which finds the means of employment for the members of their Unions. Party policy is sometimes mistaken; and the policy of the Labour Party is extraordinarily wrong in connection with this electricity movement. Fidelity to the interests of gas workers, rather than to Party policy, ought to be paramount with those members of Parliament identified with the Unions with which those workers are associated. The President of the Board of Trade made "a sincere appeal to the whole of the British people to realize that, if there can be a real national move to buy more British goods, this will do more than anything else—indeed, there is not anything else—to put the trade balance right." That also applies to industries. All that can be done by anybody in an industry to promote the sale of its products instead of imported ones, or those of other industries, contributes not only to the protection, but to the enlargement, of employment in that industry.

Street Illumination.

In presenting, at the annual meeting of the Institution of Gas Engineers, the report of the delegates—Mr. Robert Watson and Mr. Walter T. Dunn—to the Sixth Session of the International Commission on Illumination, the former made an appeal to the members not to lose interest in the subject of illumination. We do not think gas engineers and managers are doing so. As a matter of fact, we see the evidence of an increasingly active interest in place of what we must confess was, in times gone by, serious negligence. The truth is that the officials responsible to gas undertakings realize that the success electricity has so far realized in the illumination field has been due not so much to the intrinsic merits of the system as to the fact that indifference to the maintenance of consumers' gas equipment has been of generous advantage to the competitor. Gradually this condition of things is being altered, and we should like to see the change proceeding at accelerated speed. Thinking over Mr. Watson's appeal, we are afraid it indicates that he has been, through his work as a delegate, in contact with people from countries where views and conditions prevail somewhat different from those which exist in this country, and that the Association has had a greater influence than the facts here altogether warrant.

However, our impression is that the appeal was made more in connection with public than domestic lighting. When Mr. Watson looks abroad, and meets with men concerned in artificial illumination in other countries, he has become somewhat oppressed with the large strides electricity has made, in some of those countries, in the matter of street illumination. But there are points which require to be taken into consideration in this connection. In America, many of the cities and towns are supplied with gas and electricity under one administration; and there a tendency prevails to increase the night load of the electrical undertakings by adopting electricity for street purposes—illumination continuing there far into the night on a more luxuriant scale than here. Turning to Continental countries, some of them have water-power generated electrical supplies; and there naturally for public lighting purposes the price of the energy is such that electricity cannot help succeeding. But when we come to France, it is only necessary to look at the paper presented by M. Laurain at the meeting of the International Commission, to see how the "City of Light" continues largely to patronize for public lighting purposes the reliable illumination from high and low pressure gas lighting. The facts as to the progress in Paris were given in the report which Messrs. Watson and Dunn submitted to the Institution. As to this country, one of the great disadvantages we have, so far as the protection of public gas lighting is concerned, is that so many of the electricity undertakings are in the hands of municipal authorities who are also responsible for the public lighting; and despite all that can be said as to the relative merits of gas and electricity for street illumination, it is often found, where gas is a company institution and electricity is controlled municipally, that favour goes to the latter in order to increase the output. In certain districts in London, in Hastings, Sunderland, and several other places where huge expenditures are about to be made in completing the conversion of street lighting from gas to electricity, it is pointed out, in defence of the action, that the supply of the public lamps enables the running of cables through the whole of the streets, and thus produces an availability of electricity for the residents therein which otherwise they would not possess.

Another fact which no doubt was oppressive to the British gas delegates to the meeting of the International Commission, was that from other countries gas interests were not in any way represented. And here we totally agree with our Doncaster friend that, in respect of the science of illumination this and other countries are on the gas side distinctly behind the electrical competitors. It is a great pity that there should be so much indifference to the science of illumination on the part of gas men. The indictment, of course, has not general application; but in a very large measure, to those who apply gas as the agent for illumination, the charge is perfectly justified. Yet it is not the superior virtue, efficiency, or economy of electricity which has gained for it so much adoption. This being so, we have good ground in the gas industry on which to fight; but we have to admit that virtue, efficiency, and economy in respect of service rendered (where gas administrators are sensible) find an insurmountable barrier in the municipal ownership of electricity. The question is, How can gas deal with a condition of that kind? The matter requires exploration, for it is perfectly obvious that if electric lighting for the illumination afforded can beat gas, then it is due to unremunerative charges for energy, maintenance, capital, and other expenditure, which unremunerative charges have to be compensated by those pack-horses the private lighting consumers, or by the ratepayers through rates not specifically earmarked for the public lighting service. Or it may be that in some cases gas administrators do not appreciate that these are days of competition, and that prices which are not competitive cannot win.

However, in addition to the commercial aspect of the question, we hope there will be an increased interest on the part of the chief officials of gas undertakings in the scientific aspects of illumination, and that we shall see, with the passing of time, progressive application of scientific principles to the work of illumination by gas. It is clear that in many gas-supply districts traditional methods still guide in the application of gas to the purposes of public lighting. The International Illumination Commission are now taking in hand work in which the gas men of every country should be prominently concerned. The various National Illumination Committees have been asked to pursue the study of street illumination standards, and to be prepared to discuss them at the next Conference, which is to be held in New York in 1927. The British National Committee have already entered upon the work. It consists of the classification of streets and thoroughfares in the order of illumination requirements. Work of

the kind was done in 1913 by a similar Committee; but what was done then can hardly apply twelve years later, in view of the fact that, during the time which has elapsed, the need for higher standards has grown through the increase of fast-moving traffic. This suggests the desirability of raising the height of light sources, in order to improve distribution along the surface of the road and pathways, and to avoid the possibility of glare. But the higher one places the lamp, the larger must be the emission of light from it, in order to compensate for the greater distance from the source to the road, and to supply the larger amount of illumination necessary to render safe the conditions in our thoroughfares.

It is asserted that, in the traffic circumstances of to-day, 90 p.ct. of our roads and streets are not sufficiently well lighted for the safety of the public. That percentage computation comes from an electricity source. As we do not know the basis upon which the calculation was made, there is very little use attempting to contest or support it. But whatever the percentage is, there is no question that it is fairly large, and that it is the duty of all concerned in public lighting to see that the deficiency is rectified. On the part of street-lighting authorities, false notions as to economy are frequently responsible for preventing the improvement of gas lighting at a relatively small outlay; and yet the same bodies are often found willing to go to the other extreme and spend large sums in order to confer favour on the electricity supply undertaking for this particular purpose. There is no other reason. However, when we come to think that in Great Britain there is still some 75 to 80 p.ct. of the roads gas lighted, there is a field within which to promote the best of conditions in street illumination, and by that means defend a part of our business which cannot be regarded as negligible either in quantity or in respect of the time-incidence of the load. And its advertisement value should be distinctly good.

Electrical Illusions.

IN the "Correspondence" columns of "The Times," there has recently appeared that perennial illusion of electrical men that, if the average price of current to consumers for all purposes is stated in respect of a supply area, this fairly represents the charges made. This, of course, is sheer nonsense. An average figure frequently covers a multitude of sins; and the average price of electricity in a district provides an excellent cover for sins of great magnitude towards certain of the consumers. Between the lowest price per KW.-H for any purpose and the highest charge for lighting in a district, there is, as a rule, a difference of some hundreds per cent.; and we have yet to learn of justification for such a divergence which is wholly acceptable by people of average or higher intelligence. It is against all the canons of electricity supply, as drafted by electricians, to do such a fair thing as average all the outgoings for generation and distribution, capital, and other charges, and to refuse current at below that average other than under such favourable conditions as to quantity and constancy that some of the costs are thereby definitely reduced. There are consumers in some areas who are paying considerably below the total average cost of generation and transmission. There are other consumers who are paying twice and three times the average of all costs, and therefore the latter must be paying something towards the expenditure incurred in providing supply for other consumers at extraordinarily low prices. Col. R. E. Crompton, whose name is a household word in connection with electricity supply, has been, in the columns of "The Times," defending the charges of the electricity supply companies in London; but other correspondents declare that electricity consumers are fully persuaded that those who use current for lighting are doing a large part towards paying for the provision of electricity for the low-priced power and heating users. And despite all that is said electrically, those consumers—having regard to the revenue from each class of business for the quantities of energy supplied—are not far wrong; and we say this knowing well the load and diversity factor and other arguments which are so dear to our friends the electricians. However, we will not enter further into these matters on the present occasion. They are constantly before us, and the subject of controversy.

There is another matter, and that is the future of electricity charges through the coming of super-power stations. Prominent authority that he is, Col. Crompton does not give much hope of any considerable reduction in the cost of producing electricity through the concentration of its generation, although he agrees that the future extension of the use of electrical energy will depend chiefly on the lowering of the price. What strikes him is that certain of the correspondents in the discussion in our morning contemporary do not appear to appreciate that the promised reduction in the cost of generating electricity by super-power stations will, taken by itself, only affect the users in large cities, and that to a small extent. He says that it is the cost of distribution of any public service—whether it be water, gas, or electricity—which forms a large fraction of the price which the consumers pay. But we would point out that this fact has very little recognition in certain of the charges which are made for power and heating purposes, and which barely cover the cost of the fuel used at the generating station. The distribution costs, says the Colonel, form a fixed sum which is not likely to be reduced by increased efficiency of management, or by new invention, or greater engineering skill. Distribution costs can only be materially reduced by large increases in the amount of electricity which the average Londoner uses; but those costs should not be overlooked in the charges for power and heating purposes. Assuming that the promised development of a large generating station may eventually enable a reduction of the cost of coal per KW.-H to about half the present figure, a resident in London would only thereby gain about 15 p.ct. reduction of the price he is now paying. If, on the other hand, the total quantity of electrical energy now supplied by the London companies were doubled by the increase of the day load for heating, cooking, and power, Col. Crompton is of opinion that the present average price might possibly be reduced by 33 p.ct., or one-third (we take it that he means where the price is of a legitimate order, commercially). There is clearly uncertainty in the view as to the effect that the increased consumption at low prices would have upon the distribution costs. But it is plain that, in the judgment of this expert, the super-power station is not, *per se*, going to revolutionize the fortunes of electricity.

Gas Coal Stocks.

Those gas undertakings which have been stocking coal during the prevalence of lower prices have been fortunate. Some have also succeeded, with the poor demand for coal for home industrial use and the depression in exports, in arranging contracts at reduced prices upon those last entered into, but no one figure will apply to the reductions secured—they vary according to circumstances. Now, with the critical position of things in the industry, prices are showing a somewhat hardening tendency, though buyers are hoping that, as the present trouble is due to the high costs of production, these will in the result be lowered, and that, when a settlement does come (whether or not there is a fight), one of the issues will be reduced selling prices. Meanwhile, gas undertakings are looking round, and buying up any spot lots that are available.

A Rating Appeal.

In view of the changes which have taken place, there are very good reasons for gas undertakings ensuring that their assessments are based on lines which accord with current conditions. The Bridport Gas Company have recently been doing so by making an appeal against their rating to the Dorset Quarter Sessions; and they have been successful in obtaining reductions (with costs) through the case which Mr. Maitland Walker, their Counsel, and Mr. E. Howard Collins, their Rating Expert, were able to lay before the Court, though, on the other hand, Sir H. Trustram Eve and Mr. W. Harold Eve made strenuous efforts to support the assessments of the Committee, but failed. In the evidence of Mr. Howard Collins, two or three points were made which have special bearing on modern conditions of gas supply. For example, in connection with tenant's capital, he pointed out that, the character of the industry having wholly changed, it takes twice to three times as much as pre-war to earn the revenue. In this regard, he claimed five months for working expenses, and justified it on

the ground that the tenant has to supply gas for at least three months, succeeding which there has to be the meter reading, and the preparation and the sending-out of the accounts; so that it is only reasonable a hypothetical tenant should allow himself at least five months in which to supply the gas and collect the revenue. Then as to reserve coal stocks, he claimed eight weeks' average as an absolute minimum, although, in view of industrial unrest, the minimum stocks should in his opinion be not less than twelve weeks. In many cases with which Mr. Howard Collins has had to deal, the stocks already in reserve are equal to twelve weeks' supply. In several instances the same authority has successfully laid claim to 17½ p.ct. as the allowance on tenant's capital. He acknowledges that this was a figure which he took before the war, and, of course, there is the strong argument for it that, if it was right then, it is on the low side at the present time. Although 17½ p.ct. appears to be substantial for tenant's remuneration, he would, of course, not actually put this into his pocket, as, with income-tax at 4s. 6d. in the pound, a considerable percentage goes to the National Exchequer, and so does not benefit the tenant.

Rating and Valuation Bill.

To our "Correspondence" columns to-day, Mr. A. L. Ryde, the well-known rating authority, contributes a letter referring to the new Rating and Valuation Bill now before Parliament, and directs attention to a matter which should receive the serious consideration of directors and others concerned in the management of gas-works. It is one of those incidental provisions in a measure of this kind which might escape the notice of anyone but a specialist; and it is just such subjects which, if not rectified while there is the opportunity, might occasion considerable trouble hereafter. To explain the point would necessitate practically a reproduction of Mr. Ryde's letter; and therefore all that need be done here is to direct attention to the letter itself. The point, in the judgment of our correspondent, constitutes a radical change in the definition of the rateable value; and this, he submits, should not have been attempted in a Bill the primary object of which was to simplify the procedure adopted in making valuations and valuation lists.

For Economy Sake.

The London County Council sometimes study economy. The Establishment Committee found it necessary early this year to utilize certain basement rooms at the County Hall for office accommodation; and experience, it is stated, has shown that some heating arrangements are required. Experience generally does show this. As a temporary expedient, electric radiators were provided in one of the rooms. It is interesting to note that the Council were evidently not sufficiently enamoured of the radiators to do anything more than adopt them as a "temporary expedient." They have already had enough of them; seeing that the Committee report that "in view of the period for which the rooms will be required for their present purpose, the most economical course is to provide additional mains and radiators to be served from the existing heating installation, which is not electrical, and therefore is "economical" in respect of the service it renders. The experience of the Council will probably cause them to refrain in future from adopting electric heaters even as a "temporary expedient."

Bituminous Coal as Water Gas Generator Fuel.—In a Technical Paper just issued by the United States Bureau of Mines, Mr. W. A. Dunkley, Illuminating Gas Engineer, Department of the Interior, states that, by the use of properly-designed equipment, the low-sulphur coals of the Middle West, which are not regarded as first-grade material for coal gas and coke manufacture, can be made to give almost as good results in the generation of water gas as can be obtained from the more expensive Eastern high-volatile coals. Fuel market conditions, however, are not now as favourable to bituminous coal as formerly. Nevertheless, such fuel is still used in several plants; and since under certain conditions it can be utilized with notable saving in operating costs, the subject is important to gas manufacturers. The use of this fuel, he points out, also gives a water gas plant increased flexibility.

PERSONAL.

Mr. R. B. Hodgson, General Manager and Director of Messrs. Ashmore, Benson, Pease and Co., Ltd., gas plant manufacturers, of Stockton, who has been appointed to a similar post with the Whessoe Foundry and Engineering Company, Ltd., of Darlington, was on July 11 presented with a handsome mahogany secretaire, a silver salver, and a pair of silver candlesticks from the Directors and employees of Messrs. Ashmore, Benson, Pease and Co. and the Power Gas Corporation, Ltd. Mr. W. Beswick, Managing Director, who presided, said they were endeavouring to show their appreciation and regard for one who had spent seventeen years of his life with the Company. Mr. Hodgson came to them as Works Manager in 1907, and by means of his energy and ability soon won promotion, until he eventually held the important position which he was now vacating. There had been much anxiety and responsibility since 1921. A letter was read from Mr. E. Lloyd Pease, Chairman of the Company.

Mr. Wm. Pattinson, J.P., has been elected Chairman of Directors of the Hexham Gas Company in succession to the late Col. Lewis C. Lockhart, V.D.; and the vacancy on the Board has been filled by the election of Mr. Herbert Lees, J.P. (Engineer and Secretary), who has been appointed Managing Director.

Mr. Jas. J. Scott, Engineer and Manager of the Cowdenbeath Gas Company, Ltd., underwent a serious operation at a nursing home in Edinburgh on Monday of last week. He is now progressing favourably.

Miss H. A. Tyndall, daughter of Mr. J. F. Tyndall, Manager of the Deal and Walmer Gas Company, has passed her Finals and secured her B.A. degree at the University College of Wales, Aberystwyth College.

INSTITUTION OF GAS ENGINEERS.

Message from the Prince of Wales.

The President of the Institution has received from H.R.H. the Prince of Wales the following reply in response to the telegram sent to him on behalf of the members of the Institution at the annual meeting on June 9.

Union of South Africa,
On Tour,
Pietermaritzburg.
June 10, 1925.

Sir,

I am desired by the Prince of Wales to convey through you to the members of the Institution of Gas Engineers who were present at the recent annual meeting in London an expression of His Royal Highness's sincere thanks for the message of good wishes which they addressed to him as an Honorary Life Member on the 9th inst.

Yours faithfully,
(Sgd.) Godfrey Thomas,
Private Secretary.

The President,
Institution of Gas Engineers,
London.

FORTHCOMING ENGAGEMENTS.

[*Secretaries of Gas and Kindred Organizations are asked to assist in making this diary of events as complete and useful as possible by sending the earliest intimation of all meetings.*]

July 13-18.—Society of Chemical Industry.—Annual meeting at Leeds.

July 17.—Institution of Chemical Engineers.—Annual meeting at the Philosophical Hall, Leeds.

July 18.—Wales and Monmouthshire Junior Gas Association.—Visit of members and their friends to Porthcawl.

July 20-25.—Royal Sanitary Institute.—Congress at Edinburgh. H.R.H. the Duke of York has accepted the Hon. Presidentship of this congress.

July 23.—Southern Association of Gas Engineers and Managers (Eastern District).—Meeting at No. 28, Grosvenor Gardens, S.W. 1, at 2.30.

July 25.—Manchester and District Junior Gas Association.—Visit of members and their ladies to Lytham-St. Annes. During the morning the members will inspect the new gas-works at Eastham.

Sept. 14-16.—Institution of Public Lighting Engineers.—Second annual meeting and conference at Leeds.

Sept. 15-17.—Irish Association of Gas Managers.—Annual meeting in Belfast.

Oct. 19-21.—British Commercial Gas Association.—Annual conference and general meeting in Plymouth.

ELECTRICITY SUPPLY MEMORANDA.

To the journalist devoid of technical equipment, and to some with technical equipment but electrical interests, there is only one power, and that is electrical. But of the two the greater trouble is through those without knowledge of power and the competing agents; for their writings are intended for public consumption, and public opinion is unfortunately largely guided by what they say. Many of these journalists are as bad as the politicians, in acting in this matter as blind leaders of the blind. In the "Observer" for the 5th inst., there is an article headed "The Drag of Dear Power," which gives some information from the Electricity Commissioners' statistical returns for the authorized undertakings in the years 1920-23. The total number of units sold in 1920-21 was 3512 millions; in 1921-22, 3122 millions; in 1922-23, 3762 millions; in 1923-24, 4339 millions. The capital invested per head of the population was in 1921-22, £3 7s.; in 1922-23, £3 14s.; in 1923-24, £4 2s. The units consumed in those years per head of the population were 73, 88, and 101 respectively. The statement is made that in the United States the consumption in 1923 per head of the population was 528 units; while in Canada it was 910 units. At the World Power Conference last year, the figures given for the United States were 472 units; for Canada, 612; Switzerland, 700; Norway, 493; Sweden, 364; France, 147; Germany, 141; and this country 139. The figures show the difference between countries where there is water-power generation and countries which rely upon coal. The writer in the "Observer" makes the grave mistake of utilizing the consumption of electricity per head as the index of industrial efficiency, which shows that he does not know much about other agents for power, and the relative costs by them of supplying a unit of B.H.P. per hour. Those costs vary in different countries; and our manufacturers are not so crazy as some of the providers of newspaper articles for public edification or misleading seem to think. Industrial efficiency comprises many factors. Power, in the magnitude of its effect upon costs, is one of the least of them, and, as it happens for long and constant loads, electricity is not the most economical power. The extravagant ideas that exist on this subject are well typified by the writer in the "Observer." The comparative figures, he says, explain almost at once why efficiency of production and wages is much higher in the United States than in Britain, and afford a clue to the competitive position of each country. The inability of the main industries to adapt this "new force" to their purposes may, it is added, even now be at the root of the depression under which they are suffering. If that is the view of the writer, it is conclusive evidence that he cannot see beyond his nose; and if it were not for the influence such writers have upon public opinion, he might well be left to the enjoyment of his stunted knowledge of this matter. Let him just consider one statement that he makes: "Figures are given sufficient to show that the main industrial areas in Britain have been receiving power since 1922 at rates which justify the term 'cheap power'—Newcastle and Durham, Lancashire, West of Scotland, South Wales, and Yorkshire are in a favourable position from the standpoint of the companies alone." Does he know the condition of employment in those areas where "cheap" electric power is available? If not, he should investigate the subject, and this might lift the scales from his eyes.

Power Fallacies.

Domestic Utilization.

Among other features of interest in the report of the Electricity Commissioners is one referring to the domestic utilization of electricity. It is stated that light and domestic uses count for only 18·9 p.ct. of the total sales, which shows the large preponderance of consumption for industrial purposes. It is not surprising that there should be this low use of electricity per head of the population, seeing that in the main the percentage named must be used for lighting and not for domestic heating purposes. When we consider the average poor efficiency of the generation of electricity, the reason for slow development on the heating side is perfectly obvious. In 1920-21 the consumption of coal per unit of electricity generated was 3·4 lbs.; in 1921-22, 3·2 lbs.; and in 1922-23, 2·8 lbs. In other words, one ton of coal produced 655 units in 1921; while in 1922-23, the yield had risen to 802 units. This is the result of the adoption of improved generating plant in place of old types of less efficient character. But even the most advanced working only gives about 1000 units per ton of coal. With a coal of a calorific value of 12,500 B.Th.U., the average production of 802 units in 1922-23 would represent a generating efficiency of slightly over 9 p.ct.! The domestic grate can use coal with a heating efficiency of 24 p.ct.

Electric Cookers on Hire.

Quite a large number of municipal electricity undertakings have been applying for loans for the hiring out of electric cookers. By this means, even in small places, a footing has been obtained for them; but in most cases, according to the size of the supply district, saturation point is fairly quickly reached. Week by week we see references in the electrical papers to additional municipal authorities obtaining loans for this particular purpose; but one after the other (this is not reported in the journals) they soon learn from the complaints and grumblings of the agitated users that the electric cooker has not about it the same reliability as the gas-cooker. People judge these things by comparison; and that is awkward for the electricity vendors. The users ascertain that the confidence they had in their former friend, the gas cooker, was justified, while the confidence created not by experience, but by the statements of glib electrical salesmen, soon wanes and disappears altogether. There is good ground for it. Moreover, they also find that the range of utility is considerably less with the electric cooker hotplate than was the case with that of the gas cooker; also that the over-all cost for doing the same amount of work—hotplate included—is materially more with the former than with the latter. On the point of reliability, references were made at the recent meeting of the Incorporated Municipal Electrical Association as to the want of reliability in some electric cookers. We think the "some" might be interpreted as "most." Certain of the speakers hinted at the spacious scope there is for research, standardization, and improvement. However, there is no objection to every district obtaining experience with electric cookers. It is really a good thing for the gas industry. We have heard the opinions of people who have had experience of them (see, for example, the article by "Planet" in last week's "JOURNAL"), who have subsequently been extremely good advertisers of their shortcomings, who have returned to gas cookers, and who have avowed their intention never again to be deluded into making a similar departure. Moreover, the advent of a few electric cookers assists in keeping up to the mark the activities of the sales staffs of gas undertakings; and it also influences the good policy of gas-cooker modernization.

Compulsory Use in Housing Schemes.

Speaking of electric cookers, the greatest objection the gas industry has to them concerns the policy of those municipal authorities owning electricity undertakings, who equip dwellings in housing schemes with such appliances without giving the tenants any option as to the heating agent they prefer to adopt. We see it stated that the Glasgow and Liverpool Corporations are each installing electric cookers in 1000 houses under such schemes. There have recently been comments in the "JOURNAL" on this subject in relation to the clause which the Newport (Mon.) Corporation have had placed upon them, at the instance of the Gas Company, which preserves to the tenants of municipal property the right to have the agent they prefer for lighting, heating, and cooking, and so maintains fair competition between private and municipal enterprise. The same fair competition ought to be preserved between municipal gas and electricity concerns. As pointed out on a previous occasion, the National Gas Council have this matter in hand, and Counsel's opinion is being sought as to whether or not municipalities have the right to deprive their tenants of choice in the matter of patronage where both gas and electricity are available. The imposition upon tenants of a condition that they shall patronize the electricity undertaking of the local authority, whether or not that patronage is to their economic advantage, is a distinct attempt to over-ride the provision in the Gas-Works Clauses Act of 1871, which states: "The undertakers shall, upon being required so to do by the owner or occupier of any premises situate within twenty-five yards from any main of the undertakers, or such other distance as may be prescribed, give, and continue to give, a supply of gas for such premises, under such pressure in the main as may be prescribed, and they shall furnish and lay any pipe that may be necessary for such purpose." What would be the legal position of a municipal authority who tried to compel the use of electricity for cooking if a tenant applied to the gas undertaking for a supply within the terms of the general law, and what would be the position of the gas undertaking? As the law stands, the latter could not refuse to comply.

More Spending Power for the "E.D.A."

Readers of the "Memoranda" will remember that a short time ago a special appeal was made by Mr. Beauchamp, the Director of the Electrical Development Association, for more funds for prosecuting the work of the organization. He pointed out how the radius of the operations of the Association is limited by the insufficiency of money, which is not a novel experience. In view of this, it is interesting to note that, in one of the speeches made by Mr. Beauchamp at the meeting of the Incorporated Municipal Electrical Association, he stated that of the extra revenue for which he had been asking he has already had promises of about half; and this would all go in spreading the foundation of electrical educational propaganda over the whole country. The work in this direction he urged should be combined with local advertising to increase electricity demand, and to proclaim the merits of electrical goods. One of his shrewd observations was: "Co-operative advertising anywhere helps everywhere." With that we fully agree; and there is practically universal acknowledgment of its truth in the gas industry.

Factory Lighting. Much has been done in recent years to induce manufacturers to improve the lighting of their factories, in order to obtain a sufficiency of general illumination, and an adequate amount for the class of work upon which the operatives are engaged. For realizing the best efficiency in output and quality of work, there should not be too much or too little illumination. In the report of the Senior Electrical Inspector of Workshops and Factories (Mr. G. Scott Ram), one of the District Inspectors (Mr. Brown), who deals with the North of England area, states that great improvements are taking place in the standard of industrial lighting; occupiers of factories realizing that the extra production obtained as a result of increased illumination more than balances the addition to cost. He finds that lighting by large units satisfactorily placed is increasing in favour; and several installations have recently come under his notice where illumination has been increased several fold with little addition to the energy consumption. At times unexpected results are found which show that efficient lighting of the work is not the only aspect to be considered. Mr. Brown was recently shown a room where girls are employed at machines doing rather fine work. The method of illumination had been altered from distributed lighting by means of conical opal reflectors and exposed lamps to concentrated lighting using intensive type steel reflectors and gasfilled lamps entirely shielded from the operatives' eyes. Although the illumination of the work had been increased, many times, the girls sent in strong protests to the management asking for the old lighting to be restored, as they maintained that the new lighting made the room dark.

Causes Unknown, but one Supposed Fusing. There were great fires in Glasgow last week, which destroyed the Kelvin Hall, the College, and Kelvingrove Church, and a number of tenement houses; the loss being estimated at about £250,000. The fire started in the Kelvin Hall; but the cause is said to be "unknown." An eye witness states that he saw a tiny spiral of smoke emerging through the roof of the building; and before he had time to run twenty yards, flames were shooting to a great height in the air. It would be interesting to know why the fire began in the roof. Between two and three o'clock on the morning of the same day, there was a big outbreak in a malting warehouse; the damage being computed at £50,000. In the same district of the city later in the morning, a fire broke out in a two-storey building occupied by a fancy goods importer and an electrical engineer. In this case, the damage is estimated at £400; and the "Glasgow Herald" reports that in this case the outbreak is "supposed to have been caused by the fusing of an electric wire." There ought to be an inquiry in the endeavour to ascertain whether this fire epidemic in one area of the city and in one day had a common origin.

HEATING ROOMS.

Comparison of Costs of Different Methods.

In Fuel Research Board Technical Paper No. 12, which is obtainable from H.M. Stationery Office, Adastral House, Kingsway, W.C. 2, price 1s. net, Dr. Margaret Fishenden, who was assisted by R. E. Willgress, B.Sc., A.R.C.Sc., discusses the experiments on the subject of room heating carried out for the Department of Scientific and Industrial Research, and deals with the relative costs of providing sufficient energy to keep the occupants of a room comfortably warm, under different methods of heating, and in various circumstances. We must say at once that Dr. Fishenden's account is an excellent piece of work, and that everyone interested in house heating should study it.

Air Heating.

A great number of interesting facts emerge from the paper. Numerous experiments made with hot-water radiator or open gas flame heating led to the conclusion that, in the absence of any source of radiation, warmth comfort corresponds to a temperature of about 65° Fahr. If, as is usually the case, the walls and floor are slightly cooler than the air, the latter must be slightly above 65° Fahr. to meet the requirements of sedentary workers; an air temperature of 66° Fahr., in conjunction with walls, &c., at 63°, or of 67° with walls at 61°, being necessary. When the walls and floor were more than a degree or two colder than the air, very undesirable conditions prevailed; and chilliness combined with stuffiness was felt when the air temperature was slightly too low for warmth. On the other hand, with the walls a few degrees in excess of air temperature, very comfortable conditions were produced. With the flue blocked there was no position of comfort. Even with the flue open, air-heating alone was found to be far from ideal.

The volume of air drawn up the flue by an electric heater corresponded to 2¼ complete changes of the room air per hour. A gas fire giving the same heat was responsible for 3¼ changes.

It is stated that the cost of gas for continuous air heating is about 2½ times, and the cost of electricity about 7½ times, that of coke. But, owing to the greater ease of control of gas or electric appliances, they need not generally be left on for a 24-hour day. For a 16-hour day their costs would be reduced to 1·7 and 5 times that of coke.

Heating by Radiation.

For continuous heating, it is stated, by far the cheapest means of providing radiation is an open fire of low-temperature coke; open coal fires are slightly more expensive; gas fires are about 2½ times as dear as coal; and electric heaters are about 5½ times as dear as coal. [These conclusions are based on coal at 50s. per ton and calorific value 14,000 B.Th.U. per lb.; coke at 45s. per ton and calorific value 12,500 B.Th.U. per lb.; gas at 10d. per therm; and electricity at 1d. per unit.] For intermittent heating, however, the costs are very different. Suppose, for example, that a room is occupied for four hours daily, the cost of gas then becomes little more than half the cost of coal, and that of electricity about 1¼ times the cost of coal.

Effect of Room Size.

Towards the end of the paper the costs of the different available methods of air and radiation heating are compared for different numbers of sedentary workers in rooms of capacity 1000 and 4000 c.ft. respectively. At 50 p.ct. efficiency, hot-water radiators, it is stated, prove to be the cheapest method of heating continuously a 1000 c.ft. room; but for a 4000 c.ft. room an open low-temperature coke or coal fire is cheapest until there are more than three people in the room, when hot-water radiators again become the most economical. For continuous air heating gas will prove more expensive than coke, electricity than gas, and the same holds for continuous radiation heating. For intermittent heating on the basis taken—*i.e.*, with an open coal fire burning for 16 hours, but only at half rate when the room is unoccupied, with open gas or electric heaters on for the four hours the room is occupied only, with hot-water radiators on continuously, but the boiler fire at half consumption during the night, and with gas or electric air heaters on for a 16-hour day—it appears that, in a 1000 c.ft. room, hot-water radiators are again the cheapest system of heating, but are equalled by open coal, or coke, or gas fires when there are less than two occupants. As before, air heating by gas costs more than by coke-fed hot-water radiators (about twice as much) and air heating by electricity costs about three times as much as by gas. When the size of the room has increased to 4000 c.ft., the advantage of hot-water radiators over open fires is lost, and, until there are five or more occupants to be kept warm, open coke, coal, or gas fires are the cheapest. The larger the room, the more would this advantage be emphasized, especially with a small number of occupants.

When the circumstances are such as to preclude the occupants of a room from gathering together in the zone of comfort produced by an open fire—say, for instance, in an office or in a school where the desks must be more or less evenly distributed over the floor area—this method of heating becomes impracticable, and air heating must be substituted. This is especially the case when large rooms are in question. In this case hot-water radiators are usually the cheapest method of heating. An open fire on each wall, in conjunction with some air heating, would, however, probably be more comfortable, were it feasible.

Conduction through Walls, &c.

Stress is laid on proper insulation. Whatever the method of heating adopted, it is stated, the cost will be closely allied with the completeness of insulation of the rooms; and it is of the greatest importance to construct houses in such a way as to avoid high conduction losses. The losses through windows, for example, can be reduced to about half by double glazing, and a substantial reduction in the heat flow through brick walls is effected by the introduction of an air space between the two thicknesses of brick. The major proportion of the energy liberated in a room by hot-water radiators, or other convection heaters, is spent in making good the conduction losses which take place through the boundaries of the room, and relatively little energy would be required to maintain the temperature excess of the air in the absence of this mode of outflow. The case of the open fire is somewhat different, as in general a much magnified rate of ventilation is produced by this form of heating, and the temperatures reached in the room are comparatively low. Conduction losses are, therefore, reduced, but the advantages of effective insulation are still very considerable. Further economy may be effected by reducing the air flow.

Mr. H. E. Jones's Will.—Estate was left by Mr. H. E. Jones, J.P., of the gross value of £31,344, with net personalty £8726. He died on March 24 last, aged 82, and details of the many offices held by him in connection with the gas industry will be found in the "Journal" for April 1.

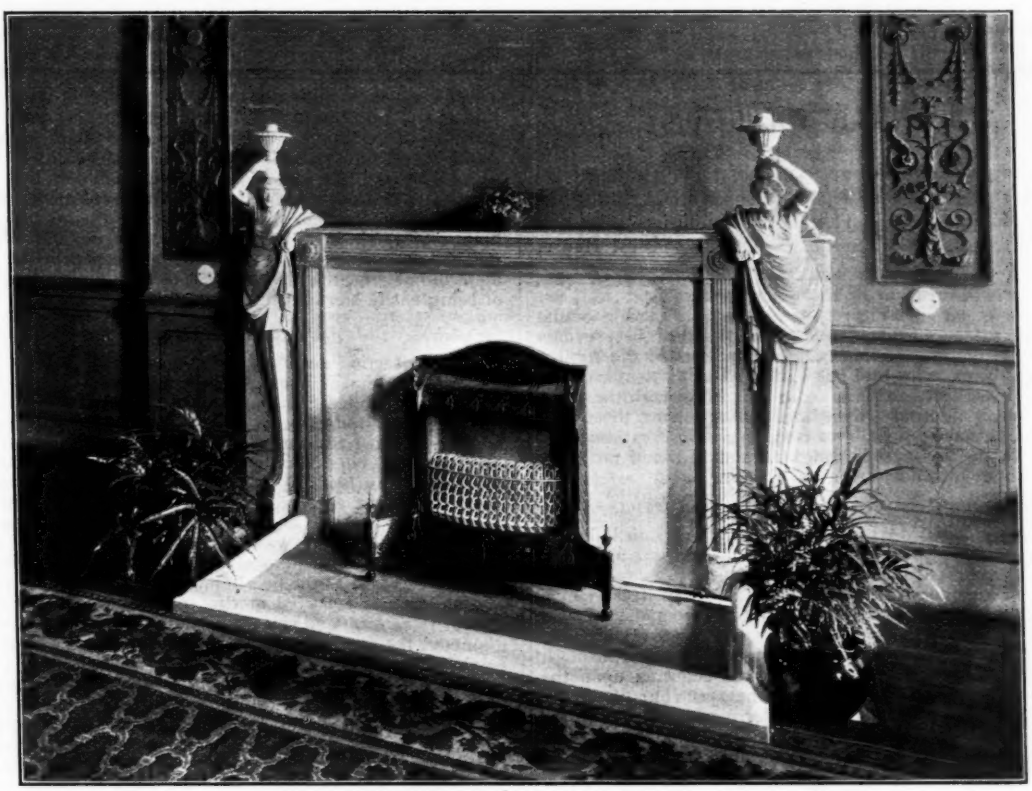
GAS AT THE INSTITUTE OF HYGIENE.

An Essential Part of the Equipment.

New premises, commodious and convenient in every respect, for the Institute of Hygiene were formally opened at No. 28, Portland Place, W., by H.R.H. Princess Mary, Viscountess Lascelles, on Friday, June 5, when a large and distinguished gathering inspected the excellent arrangements which have been made for the successful carrying on of the important campaign in which the Institute are engaged.

The work to which the Institute have set their hand is as comprehensive as it is important—including, as it does, personal hygiene, home hygiene, mental hygiene, foods, diet, and cooking, beverages, clothing, the rearing of children, social welfare, housing, and recreation.

Conferences are held from time to time to discuss and deal with matters of grave importance affecting public health; and several popular exhibitions have been promoted. Again, lectures by medical and scientific authorities, on subjects of educational value and general interest, are given at regular intervals throughout the year; while in connection with foodstuffs a great deal of analytical and bacteriological investigation has been carried out, and a large number of articles have been examined in the laboratories to ascertain their qualities and claims. There are examinations for the certificate and diploma of the Institute, in which wide interest is taken, especially by school teachers, who have thus been induced to acquire much valuable knowledge and impart it to the young. In addition to all this, a permanent museum of hygienic products and appliances, opened by the late Sir Joseph Fayrer, Bart., some twenty years ago, which is still maintained, has proved eminently useful and practical; and the medical profession and the public have alike benefited from it. To give the fullest scope to these ambitious aims and objects, such commodious and convenient premises as have been secured are essential. There are facilities here for doing and showing everything in the most effective manner; and there is no undue praise in saying that the best has been made of the opportunities offered. In a campaign to secure general cleanliness and efficient cooking, gas must enter; and, by collaboration between the Institute and the Gas Light and Coke Company, it takes a very active part at No. 28, Portland Place.



IN THE LECTURE HALL AT THE INSTITUTE OF HYGIENE.

Demonstration Room and Model Kitchen.

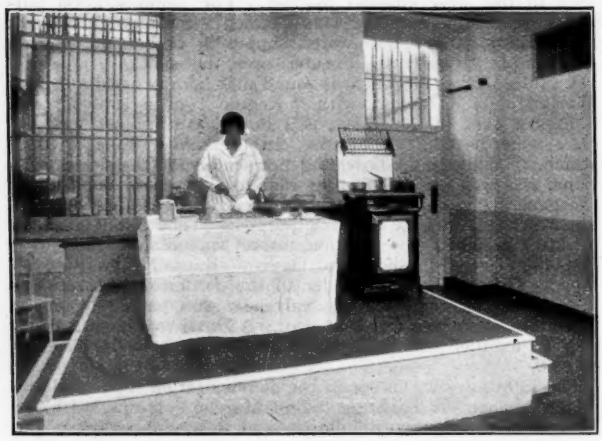
In the basement have been fitted-up a cosy demonstration room, in which the Gas Light and Coke Company's lady demonstrators will give practical cookery displays, as may be arranged by the General Secretary to the Institute (Mr. A. Seymour Harding, F.S.S.), and a fully equipped model kitchen. Ample facilities are afforded for the hygienic preparation of food in the most efficient manner. For demonstration purposes there is a National Gas Council "Standard" cooker; while an auxiliary hot water supply is obtainable from a Parkinson "Gacylette" heater over the sink.

Coming to the kitchen, it is found that here is fitted a "New World Junior" cooker, with "Regulo" oven control; and alongside this, in the recess, is a Potterton combined gas and coke water-heating apparatus. In the winter coke is used, which, in addition to providing hot water for the demonstrations, serves a central heating radiator system to supplement the general heating; while in summer time gas furnishes the hot water required for domestic purposes. The coke boiler can be utilized, when in operation, as an incinerator for refuse; and there is also shown a Davis "Burnall" gas incinerator. The hot water cylinder of the Potterton apparatus is fitted with the firm's cut-out valve, so that part only or the whole of the storage can be heated. A Davis iron draws attention to another useful domestic service performed efficiently by gas.

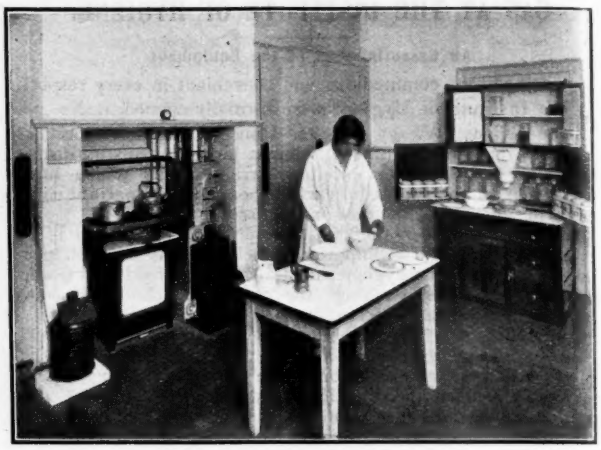
The lighting—two lamps in the demonstration room and one in the kitchen—is by Sugg "Bon Marché" lamps, with, in each case, distant control device, and a special switch made by the Gas Light and Coke Company. One of the features of this switch, in addition to its neat appearance, is the provision of a small catch, which prevents the inadvertent turning on or off of the gas. The approach to these rooms is by way of a new staircase, specially designed to be in harmony with the rooms; and at the entrance is an automatic gas-lit flash sign, indicating where the demonstration is taking place. Altogether an up-to-date and serviceable installation has been made, which will prove beneficial from all points of view.

Heating by Gas.

In addition to the central heating system already alluded to, a choice selection of gas fires has been installed in the various rooms. These rooms are of stately proportions and design; but patterns of fires available have proved equal in every way to the occasion. The ground floor is devoted to the Toilet and Medical Section and the Food Section of the Museum. In the first is a Davis "Louis Seize" fire, and in the second a Davis "Lansdowne." In each case there is at the back of the fire the imitation marble filling which is to be found in many restaurants and banks. This can be toned to match any mantelpiece or hearth which may be already in position. Upstairs in the lecture hall is a Wright "Kenilworth" fire, in the Council chamber a Wright "Aero," and in the Beverage Section a Davis "Patrician"—in all instances admirably suited to the surroundings. In the Secretary's office is installed a Richmond "Florentine" fire, while several other offices are heated by Wright "Vandyke" fires. One of those little touches that



COOKERY DEMONSTRATION ROOM.



MODEL GAS KITCHEN.

mean so much when perfection is aimed at is to be noted in connection with the more elaborate fires—that is, the oxidizing of the connecting tube to match the finish of the stove.

Once again the Gas Light and Coke Company have shown that there is no heating-point for which an appropriate gas fire cannot be found; while gas itself as a heating medium is able to meet any requirements—and none more completely than the exacting ones to be encountered in an institute of hygiene.

ATMOSPHERIC POLLUTION.

The Advisory Committee on Atmospheric Pollution, appointed in 1912, have published their report on observations during the year ended March 31, 1924. This report is published at 4s. net, and is obtainable at H.M. Stationery Office, Adastral House, Kingsway, W.C. 2.

The work is referred to in the report under eight sections. Three of these deal with the results obtained by the use of the standard instruments which have been described in previous reports; the remaining sections consider aspects of the subject which are in the experimental stage, as well as particular observations which are of special interest in connection with the study of atmospheric pollution. Since the publication of the Ninth Report, several new stations have commenced observations, and there are now in operation in England and Scotland forty-five standard gauges under eighteen authorities.

Spectrographic Analysis of Suspended Particles.

A preliminary experiment is made to test the practicability of a spectrographic analysis of matter collected from the air. The impurity was collected on a glass cover slip by means of the standard jet instrument connected to a filter pump, from which the discharge of air was passed through a gas meter, and measured at atmospheric pressure. The pump was maintained in operation for two hours, 19 c.ft. of air being drawn through the instrument, when a heavy deposit was collected upon the cover glass. Several photographs of the spectrum of an arc passing between electrodes of pure copper were taken by means of the quartz spectrograph, different exposures being given. The electrodes were then thoroughly cleaned and the collected dirt was transferred as completely as possible to the flat end of the lower one. The other electrode, which was pointed, was pushed through the dirt and made to touch the lower electrode. The whole was then arranged in front of the slit of the spectrograph, and the current was switched on. The copper poles were just separated and the deposit of dirt volatilized in the arc. The result was not satisfactory, no lines due to the volatilized matter being visible; but the method presented no obvious difficulties, and after further experiments regarding the necessary exposure of the photographic film, definite results should be obtainable. It is proposed to deposit the dust directly on to platinum foil in a special form of collecting apparatus, and to volatilize it in an arc between this foil and a platinum wire, thus eliminating all danger of contamination of the deposit during transference to a separate electrode.

Settlement Dust Counter.

One of the sections is devoted to a description of a new instrument designed by Dr. J. S. Owens (referred to in the "JOURNAL" for June 24, p. 1020) for measuring the amount of dust particles or bacteria in the air even when such particles are very coarse. The ordinary method of exposure of a plate or dish for a given time, while giving a roughly comparative result, has little value as a quantitative method, since the amount of dust deposited upon a plate exposed in the open depends upon many variable factors, such as size of dust particles, their density, temperature of air, degree of turbulence of the air; while, in addition, the deposit is obtained from an unknown volume of air. The settlement dust counter is designed to eliminate these sources of uncertainty. The instrument depends upon the principle of enclosing a definite volume of air to be tested in a small vessel with suitable precautions, the height of the vessel being known. The dust in a column of air of this height is allowed to settle upon the surface of a cover glass, where it is subsequently counted. Thus, the area of the base and the height of the column being known, the amount of dust per unit volume of air can be calculated. To permit the measurement of bacteria, the instrument is of such design that it admits of being easily sterilized by heating.

Dust in the Upper Air.

Another section deals with the question of dust in the upper air; and mention is made of the results obtained by Dr. Kimball, of the United States Weather Bureau. Dr. Kimball has taken over a hundred records from aeroplanes, while 45 records have been taken from a balloon. They were taken at different heights and under varying conditions from the ground level to a maximum height of 14,000 ft. It was found that with a clear sky in the morning there is more dust near the ground, and less between 2000 and 7000 ft., than in the afternoon. Often with clear skies there was a marked increase in the dust content with elevation up to about 2000 to 5000 ft., and then a gradual decrease as the height increased. The average diameter of the particles collected at the surface was about four times that at 10,000 ft.; and since the volume varies as the cube of the diameter, the average volume of each particle at the surface was 64 times that at 10,000 ft.

Researches were also carried out into the effect of atmospheric pollution on visibility. It appears that roughly a loss of 50 p.ct. in 50 ft. is caused by the presence of 32,000 particles per c.c., or by 2·6 milligrammes per cub.m. An interesting feature of the report is a discussion of the darkness of Jan. 23, 1924.

We learn from the report that the air was not as pure as in the previous year.

Detection of Carbon Monoxide.—In a communication by Mr. S. H. Katz, of the Pittsburgh Experiment Station of the United States Bureau of Mines, published in "Industrial and Engineering Chemistry" for June, reference is made to an instrument for quickly determining the presence of carbon monoxide in air. It is a recently-developed simple colour test which permits estimation in less than a minute of concentrations from about 0·1 to 1·0 p.ct. by comparing the shade of colour with permanent standard colours. The active material is called "Hoolamite," from the names of the inventors, Messrs. C. R. Hoover and A. B. Lamb, and consists of granular pumice stone impregnated with a mixture of iodine pentoxide and fuming sulphuric acid. "Hoolamite" is sealed in small glass tubes, which are broken at the tips for test. These are inserted in the main instrument, which consists of a tube of activated charcoal, through which the gases are drawn by a rubber hand bulb. The charcoal removes all gases from the air stream which could cause a reaction similar to carbon monoxide, and give a false test. The rubber bulb discharges through the "Hoolamite," changing it from light grey to blue or green, owing to liberation of iodine by the oxidation of carbon monoxide when the latter gas is present. A colour scale with figures corresponding to the respective percentages of carbon monoxide is fixed alongside the tube of "Hoolamite."

BOSTON'S GAS CENTENARY.

A Lincolnshire Celebration.

In the old-world Lincolnshire town of Boston, last Thursday, there was celebrated the centenary of one of its most important commercial undertakings. Strolling through the streets, and glancing at the buildings, one can see history written everywhere; and it is easy to realize that in connection with such a town the passage of a hundred years is a comparatively small thing. But for a business undertaking to complete a century of existence is a big thing, and a reasonable cause of satisfaction. Much of Boston's one-time glory has, alas, departed—though there are those to be found who are still hoping for its return. But be this as it may, numerous advantages remain to the town, and among them an enterprising, and consequently progressive, Gas Company, whose centenary has recently been reached. It was in May, 1825, that the Act for lighting with gas the borough and neighbourhood of Boston received the Royal Assent; and the first general meeting of the Company was held later in the same month. Thus this year sees the completion of a hundred years of useful service; and the Board decided to mark the event by the issue of a booklet to every shareholder, describing the origin of the undertaking, the progress made, and the works as they exist to-day. From this carefully compiled and excellently prepared booklet we were able to reproduce some particulars and illustrations on pp. 100-101 of last week's "JOURNAL."

The proprietors finished up the first year with a deficit of over £1500; but as years went on the consumption of gas increased, and it still goes on increasing. As a matter of fact, the sale of gas has risen from 100 million c.ft. in 1920 to 134 millions in 1924-25—the increase in the last two years having amounted to more than 21 million c.ft. At the end of last century there were about 300 gas cookers in use in the town; while at the present time there are over 3300. In 1897 the Company had 1800 customers; to-day they number nearly 6000, of whom more than one-half receive their gas through prepayment meters. The prosperity of the Company has made possible many improvements in both manufacturing and distributing plant. In November last the price of gas was reduced to 1s. per therm. It is interesting to recall that during the late war the works had a narrow escape from destruction, when, in September, 1916, Boston was bombed by German aircraft; the entrance gates and certain buildings sustaining considerable damage.

GOOD SERVICE.

By way of still further marking the completion of a century of service, the Directors decided that the annual meeting of the Company on July 9 should be followed by a luncheon at the Assembly Rooms, in the Market Place. This proved so enjoyable a function that the only regret expressed was that no one present could hope to take part in the second centenary of the gas supply of Boston. A party of over fifty sat down, under the genial chairmanship of Mr. Tom Kitwood, J.P., who has been a Director of the Company for over thirty years, and is now Chairman. He was supported by Mr. J. W. Thorns, J.P. (Vice-Chairman of the Company), and Messrs. J. Shaw, R. G. Shadbolt, and J. G. Clark, J.P. (Directors). Of course, Mr. J. Stewart Dougall (the Engineer and Manager) was there. Appointed to his position in 1889, Mr. Dougall has largely assisted in developing the undertaking to its present dimensions. When he took charge of the works, 36 years ago, the annual sale of gas was some 40 million c.ft., to about 2000 consumers; while the figures for 1924 were 125 million c.ft. and 5660 respectively. Mr. Dougall, and his brother, Mr. James Dougall, of the Chiswick Meter and Engineering Works (who was also present), bear a name that has for a great number of years been known and respected in the gas industry. Among other officials present was Mr. W. C. Chapman (the Assistant Manager). To the gentlemen named and to the Clerks to the Company (Messrs. F. T. White & Son) congratulations are due on the completeness of all the arrangements. The guests included the Mayor (Mr. C. Day), the Deputy Mayor (Mr. C. H. Wing), the Town Clerk (Mr. Edmund Waite), and other public officials, as well as Mr. F. A. West, the President, and Mr. W. H. Mainwaring, the Hon. Secretary, of the Eastern Counties Gas Managers' Association, and some other neighbouring gas engineers.

The toast list was a short one. After the Chairman had given "The King," the Town Clerk proposed "The Boston Gas Light and Coke Company," and said the Company had rendered to the town long service on which they could fairly look back with the utmost satisfaction. The booklet showed them that the Company had been managed successfully. Looking through the list of Chairmen one realized that the control of the undertaking during its hundred years' existence had been vested in men whose interest had been completely identified with the progress and prosperity of the town of Boston. This was all to the good. They all congratulated the Company on its long existence, and wished it continued success and prosperity. In the course of his acknowledgment, the Chairman pointed to the fact that during the past two years the consumers had shared in the profits to the extent of more than £9000, of which £400 was allocated in special discount to large users of gas. He only hoped that circumstances might enable them in the future to make still further reductions in the price of gas.

The only other toast—"Our Guests"—was submitted by Mr. R. G. Shadbolt, who remarked that looking back over the past century the Company had certainly nothing to be ashamed of in the way they had discharged their duties to the public. If every other industry was assisting in proportion to the gas industry to pull things round, it would not be long before this country (and the civilized world generally) was once more on its feet. During the past three years, when the trade of the country had been so bad, this little Company had increased their output to no less an extent than 23 p.ct. An undertaking which could so serve the public had a claim to recognition. He believed theirs was the first statutory gas undertaking in Lincolnshire to celebrate its centenary. Louth was a very good second. The Mayor and Mr. F. A. West responded to the toast, and both congratulated the Directors, officials, and shareholders on the happy position in which they found themselves. The Mayor bore testimony, also, to the progressive and up-to-date methods of the Company; while Mr. West made the remark—with which those present showed their agreement—that much of the success achieved had been due to the excellent management of the concern by Mr. Dougall.

INAUGURATION OF VERTICALS AT NEWBURY.

A Woodall-Duckham Installation.

Particulars were given on p. 101 of last week's "JOURNAL" of an installation of Woodall-Duckham vertical retorts at the Newbury Corporation Gas-Works. The bench, it was explained in a booklet prepared by Mr. W. R. Davey (the Engineer and Manager), at present comprises eight retorts, but is arranged so that two more retorts can be added when required.

The official inauguration took place on Monday, July 6, when the works were visited by the Mayor and Mayoress (Alderman and Mrs. Stradling), members of the Corporation, borough officials, and a number of gas engineers from neighbouring towns. Following upon an inspection of the plant, those present were entertained at tea by the Mayor and Mayoress. The Mayor, in offering a hearty welcome to the visitors, on behalf of the Corporation and the Gas Committee, pointed out that the town purchased the gas-works in 1878, and the capital was then £25,000, which, with subsequent expenditure, had grown to £70,000. Of this sum £33,000 had been paid off, so that the concern to-day represented about £37,000, which they would agree was good value for money; and good service had been rendered to the community.

Alderman Charles Lucas (the Chairman of the Gas Committee), on being called upon, said he had been a member of the Gas Committee for 47 years, and he was glad to think they had now a first-class undertaking. The Contractors for the vertical retorts (the Woodall-Duckham Vertical Retort and Oven Construction Company (1920), Ltd.) had made certain promises, which had been satisfactorily fulfilled. Before the installation they were making 11,000 c.ft. of gas per ton of coal carbonized; now they were making 17,000 c.ft. per ton. The expenditure had been heavy, but it would prove remunerative. They owed a great debt of gratitude to Mr. Davey, who had superintended the work with much enthusiasm and great skill.

On behalf of the Contractors, Mr. F. B. Richards thanked Alderman Lucas for his appreciative remarks, and acknowledged the thoroughly competent way in which Mr. Davey had supervised the carrying out of the work. On behalf of his firm, he asked Alderman Lucas to accept a silver salver, as a memento of the inauguration of the vertical retorts.

"Success to the Newbury Corporation Gas Undertaking" was proposed by Mr. William Higgs, of Basingstoke, and responded to by Mr. Davey, who said the contract had been successfully completed, without a hitch. The Committee had supported him loyally, and he had received valuable help from his Assistant (Mr. L. W. Thorn) and the Works Foreman (Mr. A. Hazell).

Gas Cooking in Wembley Civic Hall.—The all-gas kitchen fitted by Messrs. R. & A. Main, Ltd., at the Civic Hall, Wembley, and described in the "JOURNAL" for May 27 (p. 590), was brought into use last week, when the Corporation of Hull entertained at luncheon T.R.H. the Duke and Duchess of York and many distinguished visitors.

Freedom of Manchester bestowed on Marshal Foch.—At the British Embassy in Paris, on Monday, July 6, Marshal Foch was made a freeman of the City of Manchester. The Lord Mayor of Manchester, Alderman F. J. West, on behalf of the City Council, delivered the address of homage. The company assembled at the presentation were limited to Marshal and Madame Foch, the British Ambassador, Lord Crewe, General Weygand, and officers on Marshal Foch's staff, and the Military, Naval, and Air Attachés at the Embassy.

FURTHER OBSERVATIONS ON CALORIFIC VALUE AND GAS TESTING.

By B.Th.U.

The article which the writer contributed to the "Journal" for May 20 last (p. 528) drew a response from Mr. Norton H. Humphrys on June 10 (p. 735) which it would hardly be courteous to ignore. Mr. Humphrys' great interest in small undertakings, and his right from long practical experience to state their case, is generally recognized. Whether we agree entirely with all Mr. Humphrys has to say on their behalf or not, we appreciate his consistent efforts towards their well-being.

It is obvious, from the few official tests that are made of the gas supplied by small undertakings, that the average may fall appreciably above or below the true average; but it is rather sweeping criticism to describe the "costly and cumbersome official calorimeter set" as a "white elephant." The object of official testing is to keep gas undertakings up to their statutory obligations; and if the testing is efficiently done, it is surely not for those connected with small undertakings to complain that it is too spasmodic. The primary idea is that the gas shall be kept as near as practicable to the official declaration; and this should be practised whether the tests are four or one-hundred-and-four per annum. The manager of the small works does not know, or should not know, when the official examiner will turn up for an official test, and, in wisdom, may be assumed to "be prepared"—just as the wise motorist at every "blind" corner avoids the risk entailed by being on the wrong side.

It may or may not be true that there are simple, self-contained, and portable direct-reading apparatus that can be "operated by any intelligent lad" which would give more satisfactory results than the Boys calorimeter. It is a fact, however, that even the continuous-recording calorimeter, which is not moved about, has not yet been raised to the sublime degree of an official instrument, although types have been tentatively prescribed. Certainly, for an equal number of tests, the official calorimeter used for small works testing will give more accurate results than any "portable direct-reading apparatus"; so that the only point of Mr. Humphrys' criticism is that small works, to be adequately controlled, should have a greater number of official tests. That is a development which they are unlikely to welcome. We must not be too fine or too critical of the means that have been employed to put into effect the provisions of the Gas Regulation Act, lest the control authorities take at its face value the suggestion that official tests on small works are too few in number.

The writer was particularly careful, in the first article, not to take sides on the question of whether or not uniformity of quality is desirable. Despite the widespread feeling in favour of constancy, it would seem that the "straight line" may be appraised too highly. Mr. Humphrys considers a jump of 40 B.Th.U. between one day and another both undesirable and avoidable. Preponderating opinion is on his side; but apart from generalizations, there is not too much really sound evidence that, so long as the normal quality is high enough, a variation to this extent produces any dissatisfaction whatever. The writer's experience is that, with a declaration of 500 B.Th.U. or over, a variation of 40 B.Th.U.—say, from 480 to 520 B.Th.U.—produces no prejudice whatever. Appliances (whether lighting, heating, or cooking) that will not work satisfactorily within the comparatively small margin of 8 p.ct. are not worth much. While abnormal variations in quality are to be deplored, let us avoid accepting too readily the other extreme of "a straight waistcoat," in which there is no freedom of movement whatever.

It may be explained here that the charts which accompanied the previous article did not show, as Mr. Humphrys surmises, a drop of 40 B.Th.U. between one day and the next, and only on one occasion between one testing and the next succeeding one. They did show, as was intended, that there is an appreciable margin between the highest and the lowest tests, even when the final outcome is an average that is practically identical with the value declared. I have little doubt that the management of the undertaking referred to, were it obligatory, would be able to keep to the margin of 20 to 25 B.Th.U. which Mr. Humphrys would permit. But no complaints have arisen through the somewhat wider margin, nor have they been discovered by a virile distribution department. This coincides with the writer's experience in connection with other undertakings, and cannot on the facts be interpreted as reflecting upon the quality of management. Where the safety line lies, as between maximum and minimum calorific value supplied, has not been conclusively determined. It would vary according to the quality which it is decided shall be declared—*i.e.*, a high declaration would have a bigger margin in B.Th.U. than a low declaration. The Gas Regulation Act allows a pretty wide margin; and no one has yet attempted to show that it is too wide for practical purposes and economical usage.

These points, however, need not now be laboured further. Mr. Humphrys is obviously against a uniform calorific value throughout the country—contributing some useful reminders hereon, and finishing up by saying: "If there exists such a thing as one fixed value that is equally desirable under all the various conditions of gas consumption, it will gradually acquire increased importance and prominence as the survival of the fittest." The same law of survival will determine whether straight-line value must be held to be sacrosanct, as some would have it. A straight line cannot be rigidly adhered to without some extra cost in supervision, and, in many cases, additional cost in manufacture. It is not proved that the result would be worth it. We may heartily agree with Mr. Humphrys that "the interests of the consumers were viewed in correct perspective" by the 1920 Act.

Times of Testing.

From the purely technical or administrative aspect, one or two things may now be said in reference to official testings and their relation to the true average of the gas supplied. Where the quality fluctuates, as it does with most undertakings, and spasmodic tests are prescribed—*i.e.*, say, less than three per week—much depends upon the gas examiner as to whether the tests fairly reflect the true average or not. A considerable latitude is allowed by the Prescriptions, thus:

> In testing places for which testings on more than seven days in each quarter have been prescribed, at least one-tenth, but not more than one-fifth, of the total number of testings shall be made on Sundays. . . . At testing places at which testings of calorific value are prescribed to be made on more than two days in each quarter, not more than one-half, and not less than one-fifth, shall be made in each calendar month.

It may be accepted as reasonably correct that the quality obtained by a test fairly represents the quality of the bulk of gas passing along from the distributing holders to the consumers at the particular time of the test. If a gas examiner's visits synchronize with the period of biggest draught on the mains, it would seem, therefore, he is sampling a bigger "parcel" of gas than if the visits are mostly at lighter outputs. Sundays are usually days of smaller output than week-days; and the incidence of testing is by no means likely to be the same if one-fifth of the tests are made on Sundays, as would be the case if only one-tenth were made on that day. For the same reason, it would seem that a test taken during the heavy cooking hours of a week-day is more valuable as an indicator than a test taken (say) between 7 and 8 p.m. of a summer evening. Something may be said, also, for the reasonable proportioning of tests between the various week-days, some of which have a much bigger normal output than others. There are many factors that promote or prejudice the efficacy of the testing as a true indicator; and the time of testing is one of them. Obviously, a certain measure of latitude must be allowed gas examiners—especially those who are not whole-time servants. The point which it is sought to make here is that, if they have a knowledge of the inner working of gas undertakings, they are more competent to hold the scales fairly, and to get the maximum effectiveness from the duties they have undertaken by considering the time selected for a test in conjunction with the probable conditions of supply at that time.

Much has been said about stratification of gas in holders, but not quite so much about the condensation of light oils on the water in gasholder tanks. Naphthalene deposits are commonly found in the inlet and outlet pipes of gasholders; and it is not unlikely that such deposits appear on the inner sides of the holders—during cold evenings. Whatever the explanation, the writer is inclined to the belief that, when gas is tested while the holders are under the influence of the rays of a mid-day summer sun, the quality is appreciably higher than when the metal-work of the holder is comparatively cool. There appears to be volatilization of some kind going on, either of naphthalene or light oils. Anyway, for what it is worth, it is mentioned here; and perhaps some enthusiast in research will be tempted to experiment with the object of ascertaining whether there is anything in the suggestion.

Gas Examiners.

Mr. Humphrys evidently dissents from the observations made in the first article on this subject. Apparently his experience is not quite as extensive as it might have been. There are cases in which surveyors, with no chemical knowledge whatever, have been appointed to these posts, and others where the qualifications would stand little investigation. In some of these cases the gas company's officials have had to initiate the "examiner" into the mysteries of the calorimeter. In one such "illuminating case," which came to the writer's knowledge a few days ago, the "official examiner," when being initiated into the calculations for temperature and barometric pressure, asked: "Why bother about that?"

Because Mr. Humphrys has heard of no cases in which tests have been disputed on grounds of incompetence or negligence, he deduces, *ipso facto*, that therefore they are all competent! It would be bad policy for a gas undertaking to question the competence of its examiner, and decidedly worse policy for a gas examiner, not up to his job, to report an adverse test. We

may rest assured that, during his novitiate, the incompetent examiner will not find the quality other than satisfactory, unless he is abnormally short of elementary prudence. Gas undertakings have little to fear from him; but it is rather lowering the standard of official testing that such appointments should be possible.

SALESMANSHIP IN PUBLIC UTILITY UNDERTAKINGS.

By F. W. GOODENOUGH, Executive Chairman of the British Commercial Gas Association and Controller of Gas Sales to the Gas Light and Coke Company.

[Read at the Sales Management Session of the British Advertising Convention at Harrogate.]

While I greatly appreciate the honour done me by the invitation of the Sales Managers' Association to read a paper at their session of the first British National Advertising Convention, I should like to express regret that the organizers of the conference did not see their way to provide for a Public Utilities Advertising Section, as was done at the International Advertising Convention held at Wembley last year. If there is any section of the commercial community in this country that needs to have preached to it the importance of advertising and of salesmanship generally, it is the section engaged in the operation of public utilities. Indeed, it is certain that not a few of those so engaged would repudiate the idea that they form any part of the commercial community; that they are engaged in anything so vulgar as trade; or that they could ever descend to anything so blatant as advertising.

Many of those directing such public utilities as railways, tramways, omnibus services, electricity, gas, or water undertakings—to say nothing of postal, telegraph, and telephone services—still cling to the old idea that they are in a category quite different from the mere purveyor of food, clothing, tobacco, motor cars, and other necessities or luxuries of modern life. They still cherish the thought that they are rather of the professions than of the trades; that the public owe them a debt of gratitude for serving them at all, be it never so perfunctorily or inefficiently; and that it is no part of their business to sell to the public any more of what they supply than the consumer chooses to take or apply for.

Do not let me be misunderstood as implying that all administrators and executives engaged in public utility undertakings have such primitive conceptions of their obligations. An ever-increasing number of those operating public utility services are taking their proper place in the ranks of commerce, and adopting the most enlightened views as to the part played by service in trade and industry. Nor do I mean that there are no "back numbers" in private trading concerns. If there were none, this conference would scarcely be necessary. But I do mean that, relatively, missionary work on behalf of commercial principles and practice in salesmanship is more necessary among public utility undertakings than among many other branches of commerce.

Let me here recall the resolutions that were adopted last year by the Public Utility Advertising Section of the International Conference. That section unanimously resolved:

(1) That it is as important to advertise the services which public utilities can render to the community as it is to advertise the goods of firms which have no monopoly rights of supply.
(2) That goodwill, based on equitable policy and "service-first" principles, is essential to the permanent prosperity and persistent progress of public utility undertakings.
(3) That advertising is essential to the establishment and maintenance of such goodwill.
(4) That fully educated, efficient salesmen are equally essential.
(5) That the possession of a monopoly, whether by a company or a municipality, imposes on its administrators the duty of a policy of progressive business methods, in the interests of consumers as well as of stockholders or ratepayers.

The fifth of these resolutions in particular gives me the text upon which to base the observations that I wish to submit for your consideration.

You will see that that resolution puts a policy of progressive business methods—a policy of advertising, of securing and maintaining goodwill by a "service-first" policy and truthful advertising; a policy of efficient staffing—even higher than "desirable" or "profitable," where a public utility enterprise is concerned. Though profitable it certainly is, it declares it to be nothing less than a duty, in the interests alike of buyer and seller. Why is it the duty of a monopoly public service to be 100 p.ct. efficient in its operation, and right up-to-date in its policy?

If you are given the sole right to perform a certain service for the community in a certain area, surely it does not need arguing that the right carries with it, as a right always does carry with it, a corresponding duty—the duty to serve all the members of that community in the very best possible way, since you are the only people to whom they can look for that service. Further, that right obviously imposes the duty to tell every member of the community completely and frequently all about the services you are capable of rendering him or her—in other words, to advertise constantly and effectively. If you fail to do so, then the use made of your service is less than it might be; your standing charges are higher in proportion to your turnover than they need be; and the price you have to charge for your service is higher than it need and should be. Is it, then, putting it too strongly to say that any public utility undertaking which is not fully as progressive as the most progressive business firm, which does not give the most efficient service possible, and does not advertise its service thoroughly, is wanting in its duty to the community from which it derives its powers?

I submit that it is even more necessary for a public utility undertaking to be animated by the spirit of service in its salesmanship than for any private concern, if I can say so without weakening the case for "Service First" all round; because the public have an instinctive prejudice against anything that has even the appearance of being official. Consumers expect bureaucratic treatment from public utility undertakings. All too often their expectations are fulfilled, for "officials" are inclined to be official all the world over, until they have tasted of the greater joy of being the live representative of a live commercial enterprise. It is therefore all-important that the executive of such an undertaking that really wants to run on progressive commercial lines should take special steps, first, to instil the right principles and the joys of efficient, satisfy-the-customer service into every employee of the undertaking—make salesmen of them instead of officials—and, secondly, to make every customer aware of the ideal of service that has been set before the staff, and of all that such service can mean for each customer.

The latter process serves two purposes—the one of winning ultimately the confidence of the public, the other of ensuring that they will let the executive know if they are being indifferently served. The trouble is that if the public expect poor service, they do not complain often enough when they get it. The public are long-suffering, and have acquired the habit of taking their officials, like their pleasures, sadly and silently. When they do complain, then comes the acid test of the salesmanship of the undertaking.

It is in the handling of complaints that the sales manager reveals himself. That sales manager who treats every complaint, and trains his staff to treat every complaint, not as a nuisance and an offence, but as an opportunity—an opportunity to demonstrate tact, sympathy, and understanding; an opportunity to show a desire to be more than just rather than less, to be indeed generous, even beyond equity, in some cases; an opportunity to exercise the imagination that can see the complainant's point of view, and to display the good humour that can receive his gibes unperturbed when they are undeserved; and an opportunity always to make clear his desire to satisfy and to please—that sales manager has the essentials of salesmanship in him; and his undertaking, and all those connected with it, will pass from the stifling, acrid atmosphere of officialdom into the bracing, joy-bringing air of commercial enterprise and prosperity.

I was much struck, when reading the other day a book called "Men who are Making America," by the fact that almost every one of the men therein depicted was imbued with the principle "The customer must be satisfied;" and by the remark made by Mr. John G. Shedd, the head of Messrs. Marshall, Fields, & Co., of Chicago: "I took such a delight in satisfying customers that I was sure nature intended me for a salesman." There you have it—"such a delight." Not "I got such a profit from," but "I took such a delight in." That is the true spirit of real salesmanship. Not "Honesty is the best policy," but "honesty" (in the widest sense, honesty of service throughout) "is the ideal, the right principle, the true spirit of commerce."

Let every manager of a public utility undertaking be animated by that spirit; let him take steps to see that every single employee in the concern is fired with it and acts upon it constantly because it is part of him; and then let him tell the public by every means, and at every opportunity, that this spirit animates and directs the policy of the undertaking—and all things else will be added unto him. His business will be on the golden road to the Samarkand of true success, the golden road of "Service."

Mr. W. M. MASON (Manager of the British Commercial Gas Association) read the paper, in the regretted absence of Mr. Goodenough, and after doing so referred to the work of the "B.C.G.A." as a remarkable illustration of a National Association successfully built on the principles and ideals indicated in the paper. Mr. Mason quoted the following wonderful increases in the gas industry, which had been accomplished in spite of the fact that the industry had been doing public service for over a century. This, he emphasized, was largely due to the newer policy of giving the utmost possible value to consumers. In face of the most strenuous competition, the follow-

ing increases between 1913 and 1924 had been recorded: Gas output, 27½ p.ct.; gas consumers, 15½ p.ct.; and gas cookers in use, 55½ p.ct.

Mr. Mason also referred to the great silent reform that the gas industry had been able to make as regards the civic problem of air pollution—a reform which the modern politician seemed to ignore, although it was, undoubtedly, the most important factor in the increase of sunshine and the reduction of the death rate. In the past twenty years the output of gas by the Metropolitan and Suburban Companies had increased by 60 p.ct.—from 43,000 to 69,000 million c.ft.; and the appliances in use in their districts, so far as could be ascertained—had increased from 745,000 to 2,275,000—an increase of more than 200 p.ct. During this period, the hours of sunshine registered increased by 30 p.ct., and the death rate fell from 16·4 to 12·1 per 1000.

An excellent discussion followed. Several members of the audience—particularly one from Newcastle and another from Belfast—confirming, in a very gratifying way, from their personal experiences, what had been said as to "the new spirit in an old industry."

ITALIAN GAS AND WATER ASSOCIATION.

Meeting at Padua.

The meeting opened on Monday morning, June 15, under the Presidency of Sig. E. Sospisio, with Sig. E. Orsi as Secretary, the first business being the Committee's report on the last meeting. The accounts for the year 1924-25 were presented; and the contribution for the ensuing year was determined upon. Various modifications in the rules with reference to the constitution of the Committee were discussed and adopted; and four members of the Committee were elected. The report of the Permanent Technical Committee followed; and various communications were presented and discussed.

On Monday evening a banquet was given, in honour of the visit of the Association, by the Municipality of Padua. On Tuesday morning the meeting was resumed. Sig. Scuola presented in the afternoon a communication by Prof. Strache; and later a visit was paid to the Exhibition. In the evening the members attended an operatic performance at the Teatro Verdi.

The meeting was continued on Wednesday morning; and in the afternoon another visit to the Exhibition took place. Afterwards the gas-works were visited, under the guidance of the Engineer (Sig. Eugenio Vianello); and in the evening the official banquet was held, followed by a concert.

Thursday was occupied in other visits, and a further inspection of the Exhibition. It should be added that, by courtesy of the Società del Casino Pedrocchi, the Casino was open to the Association during the period of the meeting.

Gas-Works at Padua.

The works are situated not far from the centre of the town, on the side of the canal which connects Padua to Venice. Coal from Durban is shipped to the latter seaport, and transferred to barges by which it is brought to Padua. A gantry is built out over the canal for unloading the barges. A grab (electrically driven) lifts the coal to the top, and, by means of a telpher system, it is taken to the bunkers over the settings. These were installed by Klonne, of Dortmund.

The charge remains in for 24 hours, and the discharged coke is extremely good. Economy of labour is a feature of this system of carbonization; only five men being employed. The size of the works may be judged by the fact that the total capacity of the three holders is 12,000 cub.m. The furnaces require to be fed every five hours.

The *tout ensemble* of the works is exceedingly pleasing. On entering one sees a gold-fish pond, and a miniature fountain playing. Your correspondent was given a lovely bunch of flowers grown on the works by the Chemist (a graduate of the University of Padua), who showed him over, and proved himself an excellent cicerone. The workmen are all contented and happy, as well they may be, carrying on as they do under such pleasant conditions of life and labour.

To the lover of art Padua will be found full of interest. There are no fewer than 38 churches, all containing something to entrance. Giotto's wonderful masterpieces are treasured in the church not far from the gas-works, so can be readily located.

GAS AND WATER EXHIBITION AT PADUA.

[From our Special Correspondent.]

Synchronizing with the fifty-first annual meeting of the Italian Association of Gas and Water Engineers, the first Gas and Water Exhibition held in Italy was opened at Padua on June 5, and continued till June 19. It formed Group XI. in the International Fair which takes place from time to time in the permanent Exhibition Buildings owned by the Municipality of Padua. These buildings are well laid out, spacious, with every requirement of exhibitors available.

There are other towns on the Continent which possess their special exhibition premises—an excellent arrangement, as obviously they can be erected with greater architectural effect than can those of a temporary character. Trade can be more readily stimulated at less expense with permanent buildings, always available for any phase of business or renaissance that may occur and needs to be quickly dealt with to bring the desired harvest. The exhibition buildings at Padua have been well designed. A prominent feature in the ample grounds in which they are erected is a memorial arch placed on the centre avenue.

In the list of patrons were included a number of influential people; and on the Committee of Honour were the Premier (Sig. Mussolini); several other Ministers of State; Presidents of Gas and Water Associations from abroad (including the Institution of Gas Engineers); and others. Committees were formed for each of the eighteen groups. The Jury for the Gas and Water Group consisted of Prof. Dr. Arturo Miolati, of the University of Padua (President), Sig. Michelangelo Bohn, of Milan; Dr. Karl Bunte, of the University of Karlsruhe; Mr. Walter T. Dunn, M.I.Mech.E., of London; Herr F. Escher, of Zurich; M. Henri Laurain, of Paris; Cav. Alberto Pacchioni, of Rome; Cav. Umberto Lunghini, of Padua; Sig. Vittorio Tognetti, of Florence; and Prof. Giacinto Turazza, of the University of Padua.

In going round the Exhibition, perhaps the most impressive displays were those of the gas fire and gas cooker manufacturers. Water heating also showed up well; and there was an interesting stand fitted up by the Municipality of Padua. Austria, Belgium, Czecho-Slovakia, Germany, Italy, Switzerland, and the United States were represented by various exhibitors. Refractory materials were included; and some well-made calorimeters were shown in operation. There was also a good show of gas meters.

The principal awards were as follows: In class I., Gas Manufacture: Gold Medals to the Société Didier, of Stettin; Aug. Klonne, of Dortmund; the Société West Böhmische; and Ceretti & Tanfani, of Milan. Silver Medals to Vergasungs, of Vienna; A. Badoni, of Lecco; the Société Cy of Milan; the Société d'Electricité et Gaz, of Rome; the Société Lunense Acqua ed Forza of Spezzia; and Carlo Rusconi, of Milan. In class II., Distribution: Grand Prix to the Société Gregorini Franchi, of Brescia. Gold Medal to the Société "Eternit," of Genoa. In class III., Application: Gold Medal to the Société Auer, of Milan. Silver Medals to "Prometheus;" the Société Le Rève, of Geneva; Askama Werbe, of Dessau; Mussolini & Rigon, of Padua; and Richard Brachet & Co. Bronze Medal to Hoffmans di Pforzhein. Class IV., Measurement and Control Apparatus: Gold Medal to Elster & Co., of Milan; the Société Astra di Garivate, of Como; Meinecke, of Breslavia; Bopp & Reuther, of Mannheim; and Zacchi Vittorio, of Milan. Silver Medals to the Société "Union," of Karlsruhe; the Société "Integra," of Liège; the Société de l'Electricité et Gaz, of Rome; and Lodovico Hess, of Milan. Class V., Miscellaneous: Honourable Mention to Drucker Bros., of Padua.

COLLIERY AND ENGINEERING EXHIBITION AT MANCHESTER.

An interesting exhibition of engineering appliances, with special reference to colliery working, is being held this week in the City Exhibition Hall, Manchester. Among the things exhibited are one or two that have a close alliance with the gas industry. For example, one of the stands is occupied by the Turbine Furnace Company, Ltd., of London, who are showing their "Turbine" furnaces as applied to Lancashire and other boilers. It is claimed that by means of these furnaces the user gains in efficiency and lessens his costs. He can make use of a poorer type of fuel than would otherwise be possible. A good many of these furnaces have been fitted in gas-works in this country—*e.g.*, at Beckton, Leicester, and Derby. The latest example of the Company's activities is the fitting of a marine boiler on the steamer "Effra," for the South Metropolitan Gas Company. The "Effra" is a collier sailing between Newcastle-on-Tyne and London. The owners of the steamer wanted to burn coke, so they tried to burn it under ordinary conditions, but though successful to a degree, the result was nothing like that which they desired. Following the result of a succesful installation of a "Turbine" furnace on certain land boilers, they decided to equip a collier boat, in the hope that the furnace would be equally successful on sea as on land. After a month's working the most hopeful expectations regarding the experiment were more than justified; the time occupied by the voyage from port to port being lessened, and the cost also. The Company show a specimen of their "Vulcan" flue cleaner for boilers. This cleaner does away with the necessity for sending men into the flues to clean away the accumulated dust, and of shutting-down the boiler while the cleaning is in progress.

At an adjacent stand there is a display by Messrs. George Kent Ltd., of London and Luton, of appliances for measuring the flow of water, steam, and gas.

FACTORIES AND WORKSHOPS REPORT.

The Home Office report upon the work of the Factory Department during 1924 has been prepared by Mr. Gerald Bellhouse, Chief Inspector of Factories and Workshops, and is on sale at H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, and branches, at the price of 2s. 6d. net. In the period covered, trade conditions were again bad, though there were particular industries and branches of industry which were very prosperous and where employment was good, and others again where, though conditions could not be described as good, they were better than in 1923. It is, however, a distressing fact, says the Inspector, that the number of persons unemployed in the country is still considerably over a million; and a very large proportion of these are factory workers. One of the tragedies of the situation is that so many young people have no opportunity of learning a trade; and there is real danger that in some of the staple industries, when the revival in trade at last arrives, there will be found a shortage of skilled labour.

Following a reference to the continued increase in the generation and use of electricity, the Chief Inspector points out that important developments have been taking place in the chemical industry. A new plant—the only one of its kind in this country—has been erected in one area for the manufacture of sulphuric acid by the Schmiedal process, which is capable of turning out 1000 tons of concentrated acid a month; and in the same area a plant has been completed for the manufacture of synthetic ammonia. What is said to be the largest alcohol factory in Europe has been started-up in the Hull district. A new coke-oven and bye-product plant on the Wilputte system has been erected; and for this it is claimed that it reduces labour cost through labour-saving mechanism, and greatly improves working conditions.

It is pointed out in the report that the Joint Research Committee of the National Benzole Association and the University of Leeds have made further progress; and their report, issued in February, 1924, indicates their activities. Part I. deals with the use of highly porous bodies in the recovery of benzole from coal or coke-oven gases with particular reference to silica gel; and, in addition, it includes detailed reports by Mr. E. C. Williams, M.Sc., Research Chemist, and Mr. Basil Sadler, on their visits to the works of the Silica Gel Corporation, at Baltimore, U.S.A., where there is a small plant in operation for the production of motor spirit from coke-oven gases. In this report is also included a note on the properties of silica gel prepared by different methods. Part II. contains a memorandum on the purification of benzole by means other than sulphuric acid washing, and deals with other matters closely allied with the industry. Lengthy reference to this report will be found in the issue of the "JOURNAL" for May 6 (p. 363).

The number of registered factories in Great Britain again shows an increase; the total now standing at 142,494, as against 139,920 for 1923. The number of workshops continues to decline; the figure being 133,729, which compares with 140,850 a year ago. This decline in "workshops" is said to be largely due to the introduction of electrical power, the use of which converts premises from a "workshop" into a "factory." There is, too, the tendency for the small places to be absorbed by the big. Many special matters are dealt with in separate sections of the report, which is a record of much useful work.

ACCIDENTS.

The first of these sections is on the subject of safety; and here a substantial increase in the number of fatal accidents is reported. The point is made that the new standard imposed by the Workmen's Compensation Act, 1923, has proved very convenient in practice. As one Inspector says, it avoids the complication involved under the former rule of separating cases into two classes with a different standard for each—that is, one day's absence from work in the case of machinery accidents, and seven days' absence in the case of all other accidents. "This," he remarks, "has undoubtedly confused many occupiers in the past. It is also a further advantage to have the same standard as that fixed for compensation. A simple clear-cut rule requiring all accidents to be notified after disablement for three days is much more likely to become familiar to employers and their assistants, and consequently to be better observed; for almost all the failures to notify accidents in the past have been due to misunderstanding or forgetfulness. Many occupiers still thought until recently that only machinery accidents need be reported. Very few cases of wilful failure to notify accidents have been found." Of 956 fatal accidents last year (an increase of 89 on the total for 1923), 21 occurred on gas-works. Among miscellaneous causes of accidents, one notes an "explosion of gas during examination of valve with naked light." One fatal and two non-fatal accidents were reported as arising from the use of acetylene hand lamps. The importance of "Safety First" organization is once more emphasized. Figures are quoted to show the great value of such work.

In tar distilleries particularly, the report says, the means adopted to ascertain that the still is free from dangerous gas or fumes before any person is allowed to enter it are in many cases unsatisfactory—consisting, as they do, in a foreman going into the still to see if he can detect the presence of any such gas. As this man does not use a chemical test, but relies only on his sense of smell, for which reason he cannot wear a respirator, "this constitutes a clear breach of Regulation 7," as applying to the heavy chemical branch. Two gassing accidents that occurred during the year—one of which caused the deaths of two men—are cited as emphasizing the importance of this regulation. In connection with one of the occurrences, one learns that Mr. H. J. Bailey, an Inspector of Alkali Works, who was on the spot a short time after the accident occurred, made some inquiry into the case. There is no direct evidence that the victim was gassed; but he was taken ill soon afterwards, and died within a fortnight.

As to improvements introduced, some firms provide a supply of compressed air, which is blown into the stills while anyone is inside them—a plan that it is thought might well be generally adopted. One firm of tar distillers have replaced the small pitch pipe at the bottom of the still by a 20-in. manhole and extension pipe of the same diameter. This provides not only for a thorough ventilation of the still, when empty, but will enable a man to be rescued through this bottom manhole, instead of having to be hauled up to the top one. The prevalence of epitheliomatous ulceration among tar workers shows that good washing and bath accommodation—which can be required under the regulations—is needed.

LIGHTING.

The reference to lighting which appears in the section devoted to "Sanitation" is not a very lengthy one, and may be quoted *in extenso*:

> The recommendations of the Departmental Committee on Lighting in Factories and Workshops have not been neglected; and during the two years since they issued their third report, much has been done to bring their suggestions to the notice of employers, and to carry out investigations of the conditions at present existing. There can be no doubt that this question of lighting is exciting greater interest; but perhaps the most striking feature that emerges from the inquiries is the wide inequality found in the standard of lighting, not only in different works, but in different parts of the same works. Such inequality is strong evidence of lack of scientific knowledge, and demonstrates the need for putting forward some standard for the guidance of employers and workers, and for obtaining information as to satisfactory practice which can be made known to the persons concerned.
>
> With such objects in view, representatives of the Home Office have, during the past two years, met representatives of both employers and workers in a large number of industries, and have explained the general principles governing good lighting on the lines of the Departmental Committee's reports, and have discussed in detail the requirements of the particular industry, with special reference to determining what processes might be classified as "fine" or "very fine" work, for which a more than ordinarily high degree of illumination was desirable. These meetings have proved very useful, and both employers and workers have shown great interest in the subject. The offers to send an inspector, equipped with an instrument to take readings of the amount of illumination in use for the different processes, have been warmly welcomed.
>
> Unfortunately, it has not been found practicable at present to respond to more than a small number of the invitations received from employers, or to follow-up all the suggestions made by the workers; and arrangements made to encourage industries themselves to engage the services of an observer equipped with the necessary instrument have failed, for one reason or another, to materialize. A number of readings have, however, been taken by inspectors while work was going on; and these have yielded interesting results. The instrument used in taking these readings is the photometer; and the illumination registered by the instrument on the actual field of work is expressed by the number of foot-candles just as the temperature of a room is expressed by the number of degrees registered by the thermometer. The Departmental Committee recommended that the lighting of factories generally should not be allowed to fall below a minimum of illumination expressed as a fraction of 1 foot-candle—*i.e.*, 0·25 foot-candle—but for processes which might be classed as fine work, such as sewing, they suggested that the light should not be less than 3 foot-candles (an amount generally recognized as a "good reading light"), and for very fine work should not be less than 5 foot-candles.
>
> It is of interest, therefore, to find that in factories where attention has been given to supplying a good light for fine or very fine processes, the tests showed the amount of illumination in every case to be over 3 foot-candles; and in many cases it was above 5 foot-candles. In tailoring factories and workshops in different towns, 206 readings were taken in the operations of sewing by hand or machines, of cutting, and examining the work; and 169 were found to be over 3 foot-candles, and 88 of these over 5 foot-candles—many being twice that amount.
>
> In fine and very fine processes in hosiery factories, of 60 readings 49 were over 3 foot-candles; and of these 42 were over 5 foot-candles. In one process where a good light is recognized as important because of the close attention required, the factory had been newly equipped with an installation affording an illumination of from 13 to 23 foot-candles for each worker; while in the same factory for the same process the light previous to the new installation was less than 1 foot-candle. Both employers and workers were delighted with the improved lighting, and found it entirely satisfactory.
>
> Provided that the eyes are protected from glare, the workers appreciate a high degree of light; and, so far as we are aware, no injury is caused to the eyes by artificial illumination of 20 to 30 foot-candles, if the light is properly shaded and diffused. But the inspectors who have conducted the tests lay emphasis upon the need for much greater care in this respect than is commonly exercised. A big problem, and one which, with the raising of the standard of illumination, would be greatly intensified unless the work were placed in expert hands, is that of glare. It is an unfortunate fact that the new lamps fit the

old shades; and in many instances where the new lamps were so fitted the results have been very unsatisfactory.

The least satisfactory tests have been those obtained in the spinning and weaving departments of textile factories (other than hosiery). The amount of light provided is, on the whole, low; and there is need for more attention to its equal distribution over the plane of work on the loom or the spinning frame, and to the placing of lights so as to avoid glare on the one hand and troublesome shadows on the other.

In brush-making and cardboard-box making the majority of readings are below the 3 foot-candles. In many instances they fall below even the minimum referred to above for general purposes. In these, as in factories and workshops generally, the low readings are not usually due to economy in the use of gas or electricity, but to neglect of upkeep of fittings—gas burners and mantles, or electric light globes and shades being dirty or in need of renewal—or to bad placing of lights in relation to the position of the worker or of the machine. Sometimes even a good source of light is rendered ineffective for its purpose by a shadow being cast on the field of work by the person of the worker or by a stack of material, or by a part of a machine or a pillar.

Disease Among Pitch and Tar Workers.

A leaflet on skin epithelioma was prepared for distribution among pitch and tar workers—in tar distilleries, creosoting works, and large gas-works. Following a fatality from epitheliomatous ulceration in a tar distillery, stress was laid at the coroner's inquest on the practicability of periodic medical examination to detect the condition before it became inoperable. The occupiers agreed to adopt this course; and at the first medical examination which followed, three men were discovered with scrotal epithelioma. A similar voluntary periodic medical examination has been undertaken in other large tar distilleries.

There are a number of other sections in the report—besides the remarks of the Senior Electrical Inspector, to which reference is made elsewhere—which will be found of interest to employers of labour generally.

THE LUBRICATION OF GAS-METERS.

An Improved Method.

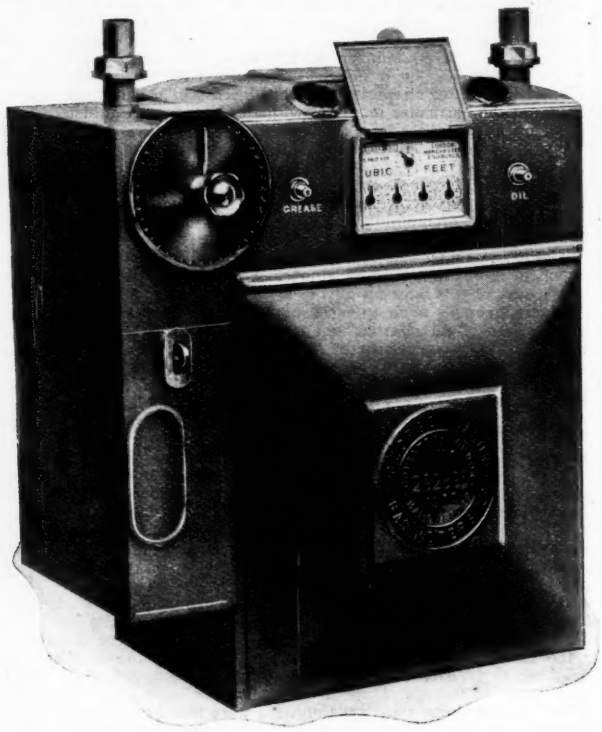
A gas-meter is a delicate instrument which is subjected to all sorts of indignities, placed in undesirable positions (in many cases owing to the lack of better accommodation), and is expected to carry out its duties efficiently. It is a sensitive instrument which cannot receive attention until it is out of order, mostly owing to the lack of oiling and greasing. This lubrication would save gas undertakings large sums of money each year in many ways, and is a long neglected and overdue provision.

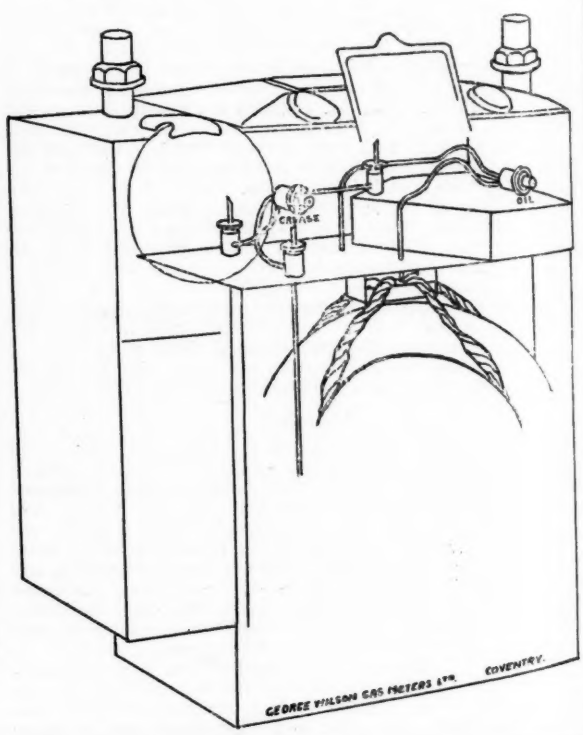
Remedy is provided by an invention of Mr. J. H. Wilson, Managing Director of Messrs. George Wilson Gas-Meters, Ltd., of Coventry; and the firm have already taken out a licence for the manufacture of this improved type of gas meter. The important features are briefly indicated in the accompanying illustrations, showing that any part of the meter can be efficiently lubricated and oiled. All stuffing boxes and glands can be re-greased, absolutely doing away with leakage, which is the greatest danger in a gas meter.

Diaphragms suffer most wear, and in many cases, owing to present-day systems of gas manufacture, become hard and dry, thereby restricting their capacity. These can now be re-conditioned at any time with oil, without interfering with mechanism or seals or removing from any position where fixed. Wet meters fitted with this system can also have bearings and glands of any size and description lubricated; and this also applies to station meters.

The effect of this invention will be considerable, especially to gas undertakings, and indirectly to the consumer, as the following advantages demonstrate:

1.—Reduction of unaccounted-for gas.
2.—Avoidance of leakage due to mechanical wear.
3.—Much longer life of gas meters.
4.—More constant and correct registration.
5.—An avoidance of excessive loss of pressure.
6.—Elimination of oscillation after years of wear.
7.—The invention can be applied to any make of meter at small cost.





Scholarships for School Children.

The Annual Fairy Gas Competition for school children organized by the British Commercial Gas Association was especially interesting this year in view of the two £50 scholarships offered in the Essay Section as the first prizes in England, Ireland, Wales, and Scotland respectively. These have been won by Effie Sinton, aged 15 years, of Glasgow, a secondary school child, and by Ethel Wood, aged 12 years, of Slade Road Council School, Birmingham, respectively. The Birmingham Gas Department are adding another £25 to the Scholarship won in their area. The subject of the essay was "The Gas-Meter and Household Economy;" and the Judges, who included Sir John Cockburn, K.C.M.G., Dr. Lydia M. Henry, Warden, Household and Social Science Department, King's College for Women, and Dr. Herbert Schofield, Principal of Loughborough College, were very much struck with the high standard of the work received. The total number of forms distributed in the competition for the Essay and Painting Sections was 180,000; while a demand for 10,000 "Notes for Lessons" was received from teachers and education authorities. These "Notes" are issued before the competition opens, and are used by school teachers in giving their pupils a preliminary lesson on the competition. The very large number distributed shows how great an interest has been aroused by the competition in educational circles.

Mr. Richard Fisher, of Mickleover, late Secretary of the Derby Gas Light and Coke Company, who died last March at the age of 96, left property of the gross value of £6029, with net personalty £3301.

British Empire Gas Exhibit Cross-Word Puzzles.

Last month 20,000 copies of a Gas Cross-Word Puzzle were distributed in the British Empire Gas Exhibit. This was the first in a series of four such monthly puzzles; the three remaining ones are being held this month and in August and September. The kind generosity of a number of gas appliance makers has enabled the Committee of the Exhibit to offer a variety of valuable appliances as prizes in the Competition. The appliances offered for the July puzzle, which is at present being distributed, comprise a "Suburbia" gas cooker (Parkinson Stove Co., Ltd.), a portable gas wash copper (Messrs. Foster & Pullen, Ltd.), and four gas lighters for coal fires (William Edgar).

Monomarks.

There has been devised and perfected by Mr. William Morris a new system for abbreviating and developing commercial communications which will, in the opinion of eminent men in industry, commerce, and finance to whom it has been submitted, give a much needed fillip to British trade; its application being world wide. The system is known as the "Monomark" (a word coined for universal use), and will, in its commercial application, enable the purchaser of goods in any part of the world to get in touch with the seller or manufacturer—in many cases at the present time almost an impossibility. Briefly stated, every firm which adopts the system will be given a short symbol made up of a group of from one to five characters, which may consist of letters, numerals, or a combination of both. The symbol is completed, in the case of British firms or individuals, by prefixing the letters B.C.M. (signifying British Commercial Monomark). To avoid confusion, the prefix will, of course, differ in other countries. The essence of the system is that every Monomark will be without a duplicate throughout the world. As an instance of its application, the seller of an article adopting the system, whether a manufacturer, merchant, or retailer, will imprint his Monomark on the article; and arrangements have been made with the General Post Office whereby all letters received by them, from whatever part of the world, which are addressed by means of the particular symbol, shall be handed over to the British Monomark Company. These letters, unopened, will be enclosed in a new envelope and immediately forwarded, through the Post Office, to the registered owner of the Monomark. The result is that any firm or individual throughout the world wishing to make inquiries about a certain article, and not knowing who the maker or seller is, need only write upon the envelope the Monomark appearing on the article in question, with the addition of the London postal district of the British Monomark Company, and post it in the ordinary way. This is only one instance of the utility of the system, for which it is claimed that there is no limit to its application to business and private uses. The system is expected to come into operation about November next. Meanwhile, further particulars may be obtained from the British Monomark Company, Ltd., 19, Abingdon Street, London, S.W. 1.

Excellent Advertising.—In last week's issue of the "Tottenham and Edmonton Weekly Herald" the Tottenham District Light, Heat, and Power Company had a full-page advertisement describing the Gas Exhibit at Wembley, and pointing out the reason why housewives should visit it. The advertisement is uncommonly well set out, and should serve to show that the Tottenham Company are anxious to secure a contented clientele.

Institution of Public Lighting Engineers.—The second annual meeting and conference of the Institution will be held in Leeds from Sept. 14 to 16. The members and delegates will be received by the Lord Mayor, and entertained by the Chairman and members of the Lighting Committee. In addition to the address of the incoming President (Mr. C. S. Shapley, Engineer and General Manager of the City of Leeds Gas Department) papers will be read dealing with important problems of public lighting; inspection will be made of local systems; and some of the most modern street lighting appliances will be on view.

Parkinson & Cowan (Gas Meters), Ltd.—We learn that, as a matter of internal organization, Messrs. Parkinson and W. & B. Cowan, Ltd., have sold their gas meter business to a new Company registered as Parkinson & Cowan (Gas Meters), Ltd., with a nominal capital of £350,000. In making the announcement it is stated that the continuity of the firm's gas meter business will not be affected by the change, as the management of Parkinson & Cowan (Gas Meters), Ltd., will be vested in the same Directors as hitherto, and the whole of the issued share capital will be held by Parkinson and W. & B. Cowan, Ltd. Customers are therefore assured that the well-known high quality of their manufactures will be maintained. The new Company will take over subsisting meter guarantees and will, in the ordinary course, collect outstanding book debts on behalf of the old Company.

CORRESPONDENCE.

[We are not responsible for opinions expressed by Correspondents.]

Precise Gas Analysis.

SIR,—I have studied with much interest the Thirteenth Report of the Research Sub-Committee of the Gas Investigation Committee of the Institution of Gas Engineers, Communication No. 4, published in the "JOURNAL" for June 17. The section of the report to which I would like to refer deals with "Notes on Precise Gas Analysis," Appendix I., pp. 51 and 52, reprinted in the "JOURNAL" pp. 895 and 896. The investigators, Mr. J. W. Wood and Dr. A. Parker, state that the notes apply to analyses conducted in a Bone and Wheeler apparatus, and that all combustions were made over copper oxide in a silica tube.

They say that the chief advantages of this method of combustion are that a much larger volume of gas can be burned than by explosion, thus giving a greater accuracy in measurement, and that combustion can be extended over sufficient time to secure completion; also there is no careful adjustment necessary to secure the right composition of an explosive mixture. Further, the feature which distinguishes this process from those of other workers using copper oxide combustion lies in the evacuation of the combustion tube before and after combustion, using the gas burette as a mercury pump.

This is very pleasant reading to me, because I have abandoned "explosions" for several years past. An article written by me for the "JOURNAL" appeared on April 23 and 30, 1912, describing the use of copper oxide, and the employment of carbon dioxide as a "sweep" for the removal of nitrogen from the combustion tube. Later, this method gave place to a new one, described and published in the "JOURNAL" for Dec. 16 and 23, 1913. This later method describes the use of a rod composed of a mixture of copper oxide and kaolin (China clay), supported by silica loops in a silica tube. In this way no evacuation is necessary, the gas in the combustion tube being cleared out by means of mercury.

It seems to me that this method has been overlooked. I should like to add that this combustion tube may be attached to either a constant-volume or a constant-pressure apparatus, according to choice.

J. G. TAPLAY.

London, S.W. 2, July 5, 1925.

Industrial and Power Loads.

SIR,—I read with much interest your leading article in the issue of the "JOURNAL" for July 1. An investigation of the power load is necessary in the interests of industry, the workers, and also the public, having regard to the desirability of improved amenities outside *and* inside the factory and workshop.

My own experience of difficulty is not in justifying lower charges for industrial uses (or, incidentally, the necessity for a system of burner maintenance and fittings inspection), but in the sliding-scale introduced with every good intention in 1875—an era when gas was used almost exclusively for lighting purposes in naked form, without competitor. In other words, in an era when load factors carried no significance, and modern lighting was undreamed of.

With the passing of time, and altered conditions, the sliding-scale as it now stands can no longer be said to be just or effectual. It omits all the potential factors necessary to determine what are fair and equitable gas charges. The *average* of all charges made for consumptions through the ordinary meter should be the datum for the return on ordinary share capital. A modern requirement of Parliament is that charges for gas must be alike to all consumers in like circumstances. The sliding-scale therefore should disclose a similar measure of intelligence.

A gas undertaking using a flat rate charges some classes of consumers too little and others too much; but the consequences of correcting such an improper method of charge would penalize the return on ordinary share capital, and, as things are, the only apparent remedy is a change to the principle of basic price and basic dividend, as initiated by the progressive South Metropolitan Company. But why, in order to do this, should companies be required to embark on separate Parliamentary Bills, and thus spend public money unnecessarily, as well as waste the time of Parliament, when the Board of Trade, under the Gas Regulation Act, could do it equally well, if permitted to exercise their powers?

Sir, before justice can be done in this important matter, the sliding-scale must function as originally intended—*i.e.*, in a just and effectual manner. Until it does, real progress will not be made in industrial sales, in better atmosphere, or in improved amenities for factory and workshop. The public and the Press generally are not conscious of the restrictions under which public utility undertakings work, and thus often believe that sins of commission are due to over-zeal, and of omission to apathy.

OIKONOMIA.

July 9, 1925.

Rating and Valuation Bill, 1925.

SIR,—It is a pity that this Bill, which contains some excellent proposals, should be so overloaded with others that there is little chance of its reaching the Statute Book. By attempting to do so much in one Bill, the Government have antagonized too many interests, and are making little progress.

I should like to call the attention of Directors and others interested in the management of gas-works to section 39 (4), which directs the manner in which the ascertainment and apportionment of the value of railways is to be carried out. I imagine that this section will be well looked after by the various rating agents and solicitors of the railway companies, but it does not apply to gas-works. But by section 43, if either the occupier of a special property (which phrase includes gas-works) or the Council of any county or county borough in whose area any part of the property is situated makes an application to the railway assessment authority, that authority may, if they

think fit, agree to undertake the valuation. The railway assessment authority, being accustomed to act under section 39 (4), will probably adopt the same principles in ascertaining the value of gas-works, which process is simply a question of fact, and not of law.

It will be seen that section 39 (4) directs that the net receipts are to be equitably divided between the hypothetical landlord and the hypothetical tenant, and the authority and any court shall not have regard solely or primarily to the return to which the tenant is entitled. In other words, the tenant is to be considered as under compulsion to rent the property whether the result of doing so is to be profitable to him or not. Such a proposal could only emanate from people who are interested in keeping-up rateable values, or from someone wishing to devise a short cut which would avoid the trouble of a considered valuation.

In my opinion it would be quite sufficient, even for their purposes, if the last three lines of the section were to be omitted altogether, and the assessment authority and any court before which the matter is under appeal "have regard to all the relevant circumstances of the case, and all material circumstances, with a view to making such a division as is fair and just between landlord and tenant."

Even such a definition is a departure from the accepted understanding of rateable value as it has existed heretofore, which has always contemplated the possibility of a tenancy of such a concern being unprofitable to the tenant, whereas the Bill starts by assuming a tenancy.

In my judgment such a radical change in the definition of rateable value should not have been attempted in a Bill whose primary object was to simplify the procedure adopted in making valuations and valuation lists.

A. L. RYDE, P.P.S.I.

49 & 50, *Parliament Street,*
Westminster, S.W. 1,
July 8, 1925.

Bitumen v. Tar.

SIR,—In your issue of the 8th inst. you publish a letter from me, and an article commenting upon the letter. You infer that some interested person drew my attention to your previous article, to which I took objection, and suggested I should reply. You seem surprised that I should have noticed the article in question so very promptly.

You could not be further from the mark. I am a regular subscriber to the "JOURNAL," which often contains information useful to me in my profession, and comes into this office week by week. I saw the article in this office myself. No one has drawn my attention to it, and I have received no suggestion from anyone about it. I think it now rests with you to withdraw remarks which can only have been intended to take away any weight my letter might have had.

There are other points to which I might reply; but if these are your usual methods of meeting correspondents who do not agree with your views, I can only say they are very different from those of other technical journals, and I am content to leave the matter to the judgment of those of your readers who, like myself, have no personal interest either in tar or bitumen.

W. J. HADFIELD,
City Surveyor.

Town Hall, Sheffield,
July 10, 1925.

[In view of what Mr. Hadfield states as to his personal interest in the contents of the "JOURNAL," we withdraw unreservedly the opening remarks in the article in question; but we cannot think those observations were in themselves of sufficient importance to justify our correspondent in refusing to deal with the more material parts of our comments.—ED. "G.J."]

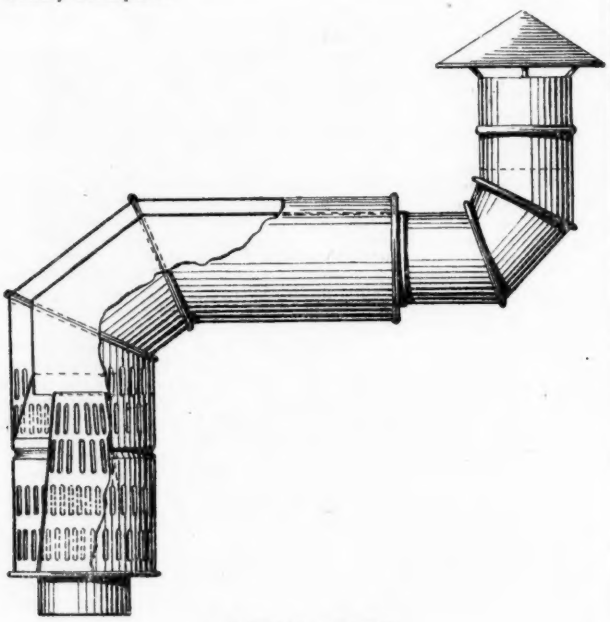
REGISTER OF PATENTS.

Flue Pipes for Geysers.—No. 234,896.

BARRALET, T. E., and NEW GEYSERS, LTD., both of City Road, E.C. 1.

No. 5481; March 3, 1924.

This invention for improvements in geyser flue pipes has for its object to prevent back-draught, to promote the up-draught and the withdrawal of the waste gases, and to provide fresh air in the bath-room to replace air consumed by combustion and so maintain a healthy atmosphere.



A Barralet Flue-Pipe.

Reference to the drawing which we reproduce will show a baffle at the lower or inlet end enclosing a tapering or truncated conical pipe. The enlarged portion of the flue-pipe and the conical pipe have respectively the slots forming air inlets to the flue and slots forming outlets for the passage of the hot gases from the geyser. Above the enlargement on the lower end of the flue-pipe is a separate annular air intake passage formed (in the construction illustrated) by enclosing the flue-pipe in an outer pipe or casing which terminates outside the wall of the room and is arranged to admit air from the outside atmosphere and deliver it in a warm condition through apertures into the room.

Manufacture of Water Gas.—No. 234,929.

GLASGOW, A. G., of Victoria Street, S.W. 1.

No. 6521; March 13, 1924.

The object of this invention is to improve the methods of applying superheated steam to water gas manufacture, and especially to carburetted water gas manufacture; and the patentee prefaces the specification with an interesting review of the development of the Humphreys and Glasgow processes as practised to-day.

Coming to the present invention, he explains that steam superheated by being passed in the reverse direction through the usual recuperative chamber or chambers is introduced to the bottom of the generator. The exit for the resulting water gas is at the top of the generator; the use of such highly superheated steam for up-running permitting down-running to be advantageously eliminated altogether. The result is that when blue water gas is required all of the steam may be superheated, and when lightly carburetted gas is made the superheating of the steam is only limited by the time necessary for gasifying the oil, in the recuperative chamber or chambers, during down-running with saturated steam.

This substantial advantage in economy is realized in present carburetted water gas plant by providing at the top of the generator a separate gas outlet controlled in correspondence with the present gas outlet from the superheating and fixing chamber or chambers, together with a separate steam inlet to the top (or outlet) of the superheating and fixing chamber or chambers, in addition to the usual reverse-make apparatus. Some saturated steam may be used at times with certain fuels, jointly with the superheated steam supply, to maintain the bottom temperature of the generator at the most advantageous point if the main steam supply becomes too highly superheated.

The invention preferably includes inter-connection of the various gas outlet and steam inlet valves in proper relation—for example, by positive mechanical interlocking—so as to secure safety and simplicity in operation.

Another advantage claimed for the invention is that during the back superheated steam run the water gas before escaping from the top of the generator gives up heat to the cool upper layer of fuel preferably charged into the generator just before the run by hand or power-operated means.

It is pointed out that the additional appliances for carrying out the invention need not prevent the plant being operated, if desired, in the normal manner heretofore practised.

Horizontal Retort Settings.—No. 234,947.

TOOGOOD, H. J., and DEMPSTER, R., & SONS, LTD., both of Elland.

No. 8405; April 3, 1924.

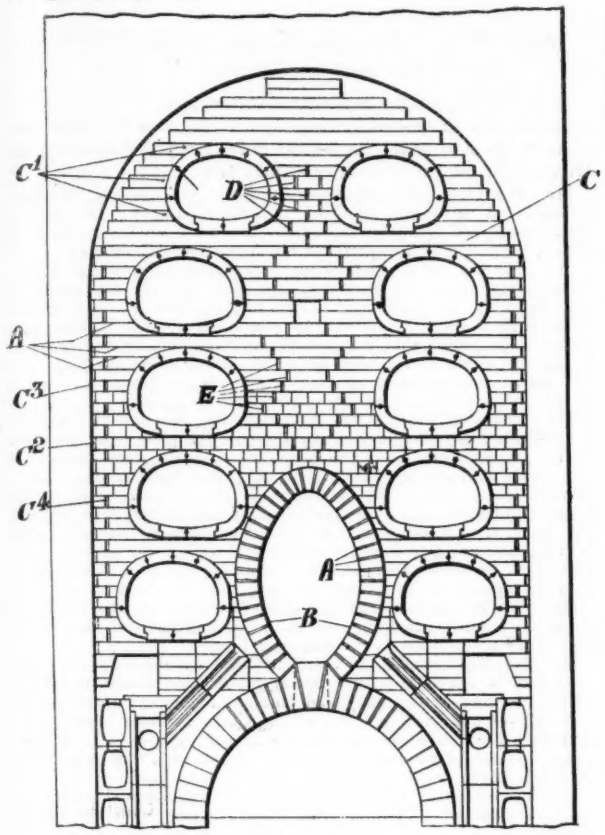
The object of this invention is to construct retort settings in such a way as to provide for initial and after expansion of the refractories.

In the introduction, the patentees discuss the expansion difficulties met with in all silica settings, and the disadvantages of using wood or other combustible joint filling to compensate for this "growth," which may continue over some months.

According to the invention, combustible materials are now eliminated, and use is made of the natural properties of the refractories as far as is possible to furnish a yielding stay wall, which, while always contacting with the pier walls and supporting its retorts, will gradually yield as the silica grows and assumes its permanent or after expansion. Also, the retorts being supported on the external and relatively stationary cold walls, as well as the interior and highly heated and expanding walls, some auto-adjustment is necessary to reduce distortion and strain to manageable proportions.

This is accomplished by each stay wall being so constructed that it will always contact with the pier walls, and will gradually yield to each change or growth of the silica, composing its mass even over many months, while this growth continues. For this purpose according to the invention the bricks which form the edges of the stay walls are staggered in relation to one another so that certain of the bricks only come in contact with the pier walls, and between the ends of such bricks and the ends of adjacent bricks empty spaces are left. The patentees also utilize the property of drying-in or shrinkage of the clay used for jointing, from the plastic state to the brick state. This is done by proportioning the thickness of the plastic clay joints to the thickness of the silica bricks or *vice versa*, so that by the known shrinking properties of such joints, the critical range of expansion of

silica between (say) 150° C. to red heat is gradually absorbed. The joints of the retorts which lie within the stay walls are well made of clay, and the portion of the stay wall which immediately surrounds the retort should be built up solid—that is to say, without sliding bricks, so that it will lend its support to the retorts and thereby assist their gas-tight qualities.



Silica Retort Setting.

Reference to the drawing which we reproduce shows the joints A between the various rows of bricks in the combustion chamber arch B and stay wall C, proportioned in thickness in relation to the bricks. The smaller the brick chosen, the better the conversion of silica in manufacture. D and E indicate spaces left between the ends of the bricks; the latter being advantageously arranged transversely across the stay walls as headers instead of longitudinally according to the ordinary practice—thereby diverting the growth into the flue and offering more joints to absorb expansion in the line of the wall for a given size of brick. The portion C^1 of the stay wall which immediately surrounds the retort is built up solid, as aforesaid. C^2, C^3 indicate the staggered edges of the bricks which form the edges of the stay wall, the bricks C^3 only coming into contact with the adjacent pier wall. The spaces C^4 between the bricks C^3 and the ends of the adjacent bricks are left open so that the bricks C^2 can accommodate themselves by shearing the clay to variations produced by the expansion or growth of the stay wall, while maintaining at all times the support to the retorts.

Production of Water Gas.—No. 235,007.

RUDE, J., of Hyde Park, W. 2.

No. 14,708; June 18, 1924.

This invention relates to a process of, and apparatus for, the production of water gas from coal, coke, or a mixture of both, in externally-heated retorts. The production of water gas by admitting steam at the base of the retort is commonly practised; but the quantity producible is limited owing to the heat-lowering effect of the steam, even if superheated.

According to this invention the quantity of water gas is augmented considerably by admitting the steam to the interior at various points and levels of the retort, thus distributing the cooling effect of the steam and of the endothermic reaction over a much larger quantity of the charge. The steam is introduced continuously to the retort, but intermittently to the various levels; and it may be admitted alternately or simultaneously to opposite sides of the retort. A further feature consists in removing the gases produced directly they are formed.

Gasifying Oil in Water Gas Production, and Improving the Quality of the Coke.—No. 235,087.

RUDE, J., of Clanricarde Gardens, W. 2.

No. 27,894; Nov. 21, 1924.

This invention is a further development of previous patents, one of which, No. 227,726, was abstracted and illustrated on p. 540 of the "JOURNAL" for March 4 last; and it comprises, apart from the utilization of oil gas as enriching medium and heating fluid, a process of producing oil gas in the distilling or preheating retort, and the utilization of the residue of the oil to improve the properties of the coke, so as to make the latter more suitable for the combustion chamber of the water gas producer. Accordingly, a separate hot zone is established by means of air blast within the retort, through which hot zone the oil to be gasified is led.

The patentee says that, when making water gas in intermittently working producers, it is essential for the safe conduct of the process that the coke shall not contain too much granular or finely divided matter, as the latter, owing to the violent nature of the blow run, is likely to cause trouble when carried off by the blast. This leads to a restriction in the choice of fuel. The introduction of oil to the coked fuel before the latter arrives at the combustion chamber of the producer reduces the danger, inasmuch as the small coke is inclined to adhere to the residue of the oil and to form lumps. It is in consequence consistent with this invention that the oil used may contain much residue-forming matter, which allows the employment of heavy oils or even tars, instead of gas oils.

The claims, as regards the apparatus itself, show that the retort is expanded at the top, where the oil is gasified, and that the oil is introduced through sprays in the roof or wall of this expanded part. The invention is described in detail, with an illustration, in the specification.

APPLICATIONS FOR PATENTS.

[Extracted from the "Official Journal" for July 8.]

Nos. 16,614-17,261.

AIRD, K.—"Gas cookers." Nos. 16,804, 16,805.

ELENBAAS, A.—"Crushing ferruginous earth of gas-works, &c." No. 17,110.

HELPS, G.—"Gas fires." No. 16,987.

MAIN, LTD., R. & A.—See Aird, K. Nos. 16,804, 16,805.

MARISCHKA, C.—"Utilization of exhaust gases from water gas generators." No. 17,131.

SAFETY GAS JET COMPANY.—"Gas burners." No. 16,937.

TAGGART, H. E.—"Gas mantles." No. 16,981.

TRUMBLE, M. J.—"Distillation of carbonaceous materials." No 16,712.

TRUMBLE, M. J.—"Production of coke." No. 17,064.

WARD, H. H.—"Carbons for recovery of benzole from gas, &c." No. 17,122.

WEST'S GAS IMPROVEMENT COMPANY, LTD.—"Coke extractors for vertical retorts." No. 16,826.

WITHERS, J. S.—See Safety Gas Jet Company. No. 16,937.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF LORDS.

Progress of Bills.

Burnley Corporation Bill: Brought from the Commons, read the first time, and referred to the Examiners, who have since reported that the further Standing Orders applicable to the Bill have been complied with.

Statutory Gas Companies (Electricity Supply Powers) Bill: Amendments reported; read the third time, and passed.

HOUSE OF COMMONS.

Progress of Bills

Bexhill Corporation Bill: Read a second time, and committed.

Burnley Corporation Bill: As amended, considered; read the third time, and passed.

Hoylake and West Kirby Urban District Council Bill, Uckfield Gas and Electricity Bill: Reported, with amendments.

Rochdale Corporation Bill: As amended, considered; amendments made; to be read the third time.

Gas Regulation Act.

Copies were presented of drafts of Special Orders proposed to be made by the Board of Trade under section 10 of the Act, on the application of the Aldershot Gas, Water, and District Lighting Company, Ormskirk and District Gas and Electricity Company, and the Oswaldtwistle Urban District Council.

Bye-Products (Coal Prices).

Mr. J. BECKETT, on the 7th inst., asked the Secretary for Mines what was the average price at which coal mine owners interested in bye-product works sell coal to themselves; and if these transactions are shown in the published profits by which wages are regulated.

Colonel LANE-FOX, in reply, said that receipts from transactions of this sort were included in the proceeds by which wages were regulated under the agreement, which provided that "fair market prices, based on current market values, are to be charged" in respect of them. He had no particulars of the actual prices charged.

Low-Temperature Carbonization.

Mr. SMITHERS asked the Secretary for Mines whether he could give any further information as to the progress being made to develop the process of low-temperature carbonization of coal with a view to making it a commercial success.

Colonel LANE-FOX stated that there was nothing to add to the statement made by the Prime Minister on June 29.

Mr. SMITHERS: Is the hon. gentleman aware that over 200,000 tons of coal have been treated by this process and the products sold in the open market, and does he not think it has now passed out of the experimental stage, and might be put on a commercial basis?

Colonel LANE-FOX: I do not think I can add anything to what I have said.

Mr. SMITHERS: In view of the very desperate state of the country

industrially, will the Government do all they possibly can to expedite putting this on a commercial basis?

Colonel LANE-FOX: Every effort will be made.

Replying to Vice-Admiral Sir Reginald Hall, who inquired if any collieries had asked for assistance under the Trade Facilities Act in putting up this plant, Colonel LANE-FOX said that in two cases applications had been made, he believed, successfully.

HOYLAKE AND WEST KIRBY DISTRICT COUNCIL BILL.

The Unopposed Committee of the House of Commons, presided over by Mr. JAMES F. HOPE (Chairman of Ways and Means), considered this Bill (see "JOURNAL" for Jan. 14, p. 83, and March 25, p. 749) on Tuesday, July 7, and ordered it to be reported for third reading.

Mr. H. GIBBON PRITCHARD (Messrs. Sharpe, Pritchard, & Co., Parliamentary Agents) outlined briefly the object of the Bill, which is to enable the promoters to purchase the gas and water undertaking of the Hoylake and West Kirby Gas and Water Company.

Reports on the provisions of the Bill were submitted to the Committee by the Board of Trade, the Home Office, the Ministry of Transport, and the Ministry of Health. Most of the suggestions made were complied with, but there were others which the Committee were asked to consider.

The Board of Trade, the Home Office, and the Ministry of Transport raised objection to a clause the purpose of which was to enable the Council to refuse to give a supply of gas to a person who would not pay his electricity account. The clause was objected to by all three Departments when the Bill was before the House of Lords (see "JOURNAL" for March 25, p. 749), but a Committee of that House agreed to its insertion, after hearing the views of Mr. H. C. Honey (Director of Gas Administration at the Board of Trade). If the Council supplied both electricity and gas, a consumer of electricity, though he refused to pay his account, could demand a supply of gas to his premises, and the Council, by the provisions of the Gas-Works (Clauses) Act, 1847, would be under an obligation to supply it. Mr. Pritchard asked the Committee to support the Council as they had been supported in the House of Lords, notwithstanding the Departmental reports.

Sir ERNEST MOON, K.C. (Speaker's Counsel), said he believed the matter had been discussed before the Committee previously.

Mr. PRITCHARD replied that the Committee had allowed the clause in the Stockton-on-Tees Corporation Bill (see "JOURNAL" for April 8, p. 130).

The clause was allowed in this case.

Another matter raised in the Board of Trade report was with regard to a clause which would empower the Council to make specifications as to the material and size of pipes between the main and the consumer's meter. The Council desired the power in order to ensure that there should be a sufficient aperture to allow of a 2-in. pressure of gas, and it was entirely in accordance with the provisions of the Model Bill of the House of Lords. The Board of Trade suggested that, in place of this clause, there should be inserted one which would enable the Council to deal with all the pipes and fittings throughout the consumer's premises, but, before they could put the clause into operation, they would have to advertise twice in a local paper, once in the "London Gazette," refer the matter to a gas engineer, and possibly hold a local inquiry. This would mean incurring a large expense; and he had been advised that the lesser power asked for by the Council was all that was necessary.

The Committee allowed the clause. (It was also allowed in the Stockton-on-Tees Bill, already referred to.)

A discussion then ensued, arising out of the report of the Ministry of Health, with regard to the periods for repayment of loans. The Council asked for forty years to repay the money borrowed for the laying of gas and water mains, but the Ministry of Health asked for a shorter period.

Mr. *Arthur Valon* (Messrs. W. A. Valon & Son, Civil Engineers, Westminster), who is advising the Council, said there was not the slightest doubt that cast-iron mains would last considerably longer than forty years. He had uncovered and drilled old mains which had been down for more than thirty years, and found them to be in good condition. There had not been a sufficiently long experience, however, to say the same with regard to steel mains.

Mr. *Edward Brough Taylor* (Water Engineer) gave similar evidence with regard to the water mains; and the Committee allowed the period of forty years, but specified that this should relate only to cast-iron mains.

The period allowed for the repayment of the purchase money (£187,000), and other money borrowed for defraying the costs of the purchase and transfer of the undertaking, was fifty years.

Mr. PRITCHARD finally referred to a clause which was inserted in the Morecambe Corporation Act of 1924, and which the Ministry of Health suggested should be inserted in the present Bill. It provided that the Council should show in their accounts relating to any undertaking or purpose all items (including payments in respect of loans applicable thereto) which ought to be entered therein in order to show the financial position of the undertaking or purpose. The Council strongly objected to the insertion of the clause, because they were bound to comply with their statutory obligations, and, logically, a similar clause should be inserted at the end of every provision in the Bill if it were inserted in this one case.

In reply to the Chairman, Mr. PRITCHARD said he did not think the Ministry had anything against the Council with regard to non-compliance with their obligations.

The Committee did not insert the clause.

Accrington Finances.—It was reported to the Accrington and District Gas and Water Board, on June 25, that borrowing powers for both gas and water mains were exhausted. It was resolved that application be made to the Ministry of Health for sanction to borrow £10,000 for new gas mains, and £5000 for new water mains.

LEGAL INTELLIGENCE.

BRIDPORT RATING APPEAL.

(*Before Mr.* J. C. SWINBURNE-HANHAM, *Chairman, Col.* P. A. COLFOX, *Vice-Chairman, and Mr.* E. R. SYKES.)

At the Dorset Quarter Sessions on the 1st inst. the hearing of the appeals by the Bridport Gas Company, Ltd., against the assessments made by the Assessment Committee of the Bridport Union and the Overseers of the Parish of Bridport took place.

Mr. MAITLAND WALKER (instructed by Mr. Austen Wetham, Solicitor, of Bridport) appeared for the Company; and Mr. J. HELDERSLEY and Mr. J. J. LLEWELYN (instructed by Messrs. Roper & Roper, Solicitors, of Bridport) for the Assessment Committee.

Mr. J. LESLIE TORR, Clerk of the Peace, read the notices of appeal, which stated that the first rate appealed against was made on Nov. 10, 1923, after a rate of 4s. 4d. in the pound on the assessable value of £620 10s. The second rate was made on April 17, 1924, after a rate of 4s. 4d. on the same value; the third rate, on Nov. 1, 1924, at 4s. 4d. in the pound, was on an assessable value of £643; and the fourth rate appealed against was made on May 12, 1924, at 4s. 6d. in the pound on an assessable value of £710.

Mr. MAITLAND WALKER said that, regarding the first two appeals, a notification had been received by the Gas Company from the Clerk to the Assessment Committee since the appeals were entered, in connection with the rate of Nov. 10, 1923, and April 17, 1924, which operated at a considerable reduction in the rateable value of the property; and his clients the Gas Company had decided that for those two rates they would accept the reduction which had been made by the Assessment Committee since the entry of the appeals. He desired the Bench to make an Order amending the rates in accordance with the figures of the Committee, and asked for costs.

Mr. *Charles Warren*, the Assistant Overseer for the Parish of Bridport, on *subpœna*, produced the rate book and the Assessment Committee's certificates amending the figures.

Mr. HELDERSLEY asked the Court to dismiss the two appeals, with costs for the respondents, the Overseers, and the Assessment Committee, as the Gas Company had obtained relief, and there was no need for the appellants to come to the Court in those appeals. He contended that there was nothing to appeal against in those matters, and no substantive ground for appeal, and the respondents should have the costs.

The CHAIRMAN said the Court allowed the appeals with costs, and the rate book would be amended in accordance with the figures accepted.

The next appeal dealt with was that in respect of the rate made on Nov. 1, 1924, the grounds of the appeal being: (1) That the appellants were over-rated. (2) That sufficient deductions had not been made from the gross estimated rental in order to arrive at the net rateable value. (3) That the rate was invalid.

Mr. MAITLAND WALKER, in outlining the case of the Gas Company, suggested that the proper method of arriving at the letting value of a gas undertaking was that known as the revenue principle—that is, the hypothetical tenant would first ascertain the gross receipts, and from this would be deducted the working expenses necessarily incurred to earn the receipts. Having deducted one figure from the other, this would leave the net receipts to be divided between the landlord as rent and the tenant as remuneration on the capital he supplied. Mr. Walker went into the items of the tenant's capital in very great detail, and argued that the hypothetical tenant in latter years had, in order to earn his receipts, been compelled to embark upon what was really an auxiliary business, and a very important portion of the gas company business—that of hiring cookers, stoves, fittings, and various other chattels, in order to induce the sale of gas. Mr. Walker claimed that 17½ p.ct. should be allowed on the amount of the tenant's capital. The last item of deduction—and one that was practically agreed between the parties—was the average annual cost of repairs, renewals, and other expenses necessary to maintain the hereditament to command the rent, commonly known as the statutable deductions. In this case very little turned on this point, as the experts engaged on either side were virtually agreed. After setting out before the Court very clearly the method of arriving at the valuation, Mr. Walker called his evidence.

Mr. *Edgar Howard Collins*, Rating Surveyor and Valuer, of No. 45, Parliament Street, Westminster, said he had upwards of thirty years' experience in the valuation of all classes of property for assessment purposes, and had valued properties in practically every county in England and Wales, in many of the burghs and counties in Scotland, and in all parts of Ireland. In the last eighteen months or two years he had valued over 150 gas undertakings in England, Wales, Scotland, and Ireland. Though he had dealt with this very large number of cases of gas undertakings, this was the only one since the war which he had had actually to bring before a Court of Quarter Sessions. Mr. Collins stated that for the purposes of his valuation he had based his calculations on the last available accounts of the Company—those for the year ended June 30, 1924. He went in great detail into the gross receipts and the working expenses, setting out by means of schedules the details of the various figures.

With regard to the tenant's capital, witness said that at present it took twice or three times as much tenant's capital as it did pre-war, in order to earn the receipts, as the character and nature of the industry had wholly changed. Whereas at one time the function of a gas undertaking was lighting only, in the last 25 years heating and cooking had come into vogue, and the gas industry, in order to develop the undertakings, had embarked on a necessarily auxiliary business in the hiring out of cookers, gas fires, boiling rings, gey-

sers, fittings and lighting points, and in addition provided the necessary piping. Mr. Collins suggested that this had proved a sound policy. In some instances where he had dealt with undertakings who had not followed this policy, they had been compelled to go out of business. This was in the case of two or three small undertakings who could not raise the necessary capital.

With reference to the tenant's capital, Mr. Collins claimed five months' average working expenses. He explained that it was necessary for the tenant to supply the gas for a period of at least three months; and after reading his meters, which would take a little time, and getting out his accounts, it was only reasonable to suppose that the hypothetical tenant would allow himself at least five months in which to supply the gas and collect his receipts. The next item in the tenant's capital was a reserve stock of coal. In this case Mr. Collins claimed eight weeks' average stock, but pointed out that this was the absolute minimum. He suggested that at least twelve weeks should be the reserve stock of coal, in view of the industrial unrest, and stated that many companies he had dealt with had, in fact, put by twelve weeks' reserve stock of coal. The next item was the office furniture, stores, tools, implements, and other chattels about the offices and works. These were to a large extent a question of fact; some of the figures being taken from the Company's accounts. The next item was in respect of the meters on hire and in stock, and cookers on hire and in stock and under repair. Mr. Collins put in schedules in great detail showing how he had arrived at his figures. He stated that he had taken the present-day value, and deducted a substantial amount for depreciation. He expressed the opinion that such chattels as meters must of necessity be kept up to a state of high efficiency, and argued, therefore, that the depreciation he had allowed over-all was a liberal sum. The last item in the tenant's capital was stock of residuals on hand, such as coke, tar, &c.—an item taken from the published accounts. The next item was cash at bank. This was a small sum, but he expressed the opinion that the hypothetical tenant should, in addition to all the other items, provide himself with a small cash balance at bank. From the total tenant's capital which was brought out, Mr. Collins deducted three months' average receipts from slot consumers and installations. A similar deduction had previously been allowed in respect of the residual products sold; and with these two deductions the net amount of the capital a tenant would require was found. As regards the allowance on the tenant's capital, Mr. Collins claimed 17½ p.ct.—a figure he had invariably used when acting for either assessment committees or gas undertakings. He had taken this figure before the war; and if it was right then, in all probability he was on the low side in only taking 17½ p.ct. at the present time. Witness pointed out that, though the income-tax was not a deduction in itself, the tenant would have to pay the Government tax on any profit he made, both on the landlord's and the tenant's capital; and, with income-tax at 4s. 6d. in the pound, he expressed the opinion that the tenant of any such works must bear this in mind in fixing the remuneration he would require on his capital. It followed, therefore, that, though 17½ p.ct. was for the tenant's remuneration, he would not actually put this into his pocket, as with the income-tax a considerable percentage would go to the Government. As regards the statutable deductions, the last item, he claimed 1s. 2¾d. per 1000 c.ft. of gas sold; and this figure was not seriously disputed.

Mr. Collins was cross-examined at length, and an endeavour was made to show that if the valuation on his basis was carried out to its logical conclusion, there would be no letting value at all, a suggestion with which the witness did not agree in this case. He saw nothing illogical in there being no letting value in an undertaking where the circumstances did arise, and, in fact, quoted a case (Burntisland) where the Court of Session in Scotland held that they saw nothing illogical in inserting a *nil* valuation in the new valuation roll. Witness pointed out that the effect of heavy rates and taxes must eventually cripple such industries as trams, railways, and similar undertakings.

After Mr. Collins had completed his evidence, this concluded the appellants' case.

Mr. HILDERSLEY, who appeared on behalf of the respondents, the Assessment Committee and the Overseers, after a short address to the Court, proceeded to call his evidence.

Sir *Herbert Trustram Eve* stated that he was a Rating Surveyor and Valuer practising at Nos. 2 and 3, The Sanctuary, Westminster, and that he had had over thirty-five years' experience in the valuation of all classes of property for rating purposes. He stated that in the past twelve months or so he had valued a large number of gas undertakings, and had agreed on assessments of anything between 4 p.ct. to 12 p.ct. on the gross receipts for the rateable value on the mains only. He put in a schedule showing what in his opinion the valuation should be. He showed a rateable value for the indirectly productive works of £350, and he took 4 p.ct. for the mains and services on the gross receipts, which were £11,480 in the Parish of Bridport, bringing out a rateable value for the latter of £460, making a total rateable value of the whole concern of £810. From this he allowed what he called a margin of £100, returning a figure of £710, so as to maintain the assessment appealed against. Sir Trustram Eve did not put forward any evidence based on the usual method of the revenue principle, and in cross-examination he gave it as his opinion that £710 was a proper rateable value, and which was supported by the settlements that he had made in a large number of other cases. He admitted under cross-examination that in one case in which he had been engaged against Mr Collins the figure agreed upon was far less than 4 p.ct. for the rateable value of the mains, but suggested that that was an exceptional case.

Mr. *W. Harold Eve*, of the firm of Messrs. William Eve & Sons, No. 10, Union Court, Old Broad Street, was the next witness called by the respondents. He put forward a valuation based on a structural value for the works alone, and brought out a total net rateable value of £770, which more than supported the assessment appealed against, and gave no valuation for the mains and services. Counsel for the appellants did not cross-examine this witness.

After the Court had been addressed by Counsel, the Bench retired, and after considerable deliberation they reduced the assessments, and allowed the two appeals with costs.

Messrs. Hedley Mason & Hedley, Rating Surveyors, of Birmingham, were also advising the Assessment Committee, but were not called to give evidence.

MISCELLANEOUS NEWS.

REPORT OF THE LIVESEY PROFESSOR AT LEEDS.

Prof. J. W. Cobb, C.B.E., B.Sc. (London and Leeds), F.I.C. (Livesey Professor at the University of Leeds), has submitted his report for the session 1923-24 to the Chairman (Alderman C. F. Tetley, M.A., LL.D.) and members of the Livesey Advisory Committee, on the work of the Department of Coal Gas and Fuel Industries (with Metallurgy).

The year under review and the current session have been marked by entries of students who, having taken degrees in chemistry at our own or other universities (Cambridge and London), came into the department for post-graduate training in Fuel with a view to taking the diploma, honours B.Sc. degree, or Ph.D. in Gas Engineering. One of these is a woman student, the first in the department, who is studying more especially domestic fires and gas appliances, in order to qualify herself for professional work in that connection. So far as regards such special students, whose advent is welcomed, and research workers on the staff, the department is developing satisfactorily; but there is still a want of steadiness in the supply of students for the normal three or four years' course of training in the University leading to a degree or diploma. Recently, we have not been able to meet the demands made upon us for really good fully-trained men, because of insufficient entries, which is unsatisfactory. The demand itself is gratifying, particularly since it comes mainly from quarters where our graduates have found openings previously, and have presumably justified their selection. But we have not yet attained the ideal of a steady supply of students, on which we can count from year to year, and a correspondingly steady demand from the gas industry and other industries dependent upon the scientific handling of fuel for their development. It is possible that this desirable steady supply of students may be stimulated by the recent decision of the Institution of Gas Engineers that no further written examination will be required for the purpose of obtaining its diploma from candidates who have taken the B.Sc. in Gas Engineering at the University of Leeds. It is not that we require a large number of students, because the department could not take them. Indeed, we have been compelled at times to trespass upon the hospitality of the Mining Department housed in the same building. The Mining Department, however, is now requiring more housing for its own equipment, and the present position is that it would be difficult for us to meet any further demands upon our accommodation for research workers. An important extension, too, of our teaching work is awaiting further accommodation before it can be made. The head of the Engineering department, Prof. David, is (I think quite rightly) of the opinion that the engineering students ought to receive some training in both Fuel and Metallurgy in lecture room and laboratory. Provision can be, and has been, made for lectures in these subjects to be attended by the engineering students; but our present laboratory is quite unsuitable both in size and general layout for the laboratory instruction of the comparatively large body of students going through the departments of mechanical, civil, and electrical engineering.

An analysis of the number of students of Gas Engineering and of Fuel and Metallurgy may be presented as follows:

	1923-24.		1924-25.
Full-time students—			
1st year B.Sc. course	5	..	5
2nd ,, ,,	2	..	4
3rd and 4th year B.Sc. course	3	..	2
Post-graduate degree students	4	..	2
Post-graduate diploma students	—	..	3
Diploma and non-degree students	4	..	1
Occasional	1	..	1
	19	..	18

The students may also be classified thus:

	1923-24.		1924-25.
Gas engineering	13	..	16
Fuel and metallurgy	6	..	2

Forty-eight students of Engineering and Mining, and advanced students of Colour Chemistry also attended various lectures in Fuel and Metallurgy.

CLASSES.—All the ordinary day classes have been held, and Electrical Engineering may now be taken as a fixed part of the course for both Gas Engineering and Metallurgical students.

The re-organization of the engineering training of the University, undertaken by Prof. David, has involved a rearrangement in the engineering instruction of our own students, which is being increased in scope and spread over the first two years of the course.

In the first year, a course of lectures will be given in general engineering, supplemented by work in the drawing office. In the second year, four series of lectures will be taken on strength of materials, heat engines, hydraulic and electrical engineering, supplemented by corresponding laboratory instruction and drawing office work.

The special evening lectures have again been given as detailed below:

(I.) THE MANUFACTURE OF COAL GAS.

(*a*) *Carbonization Practice* (six lectures), by Mr. T. F. E. Rhead, Chief Chemist, City of Birmingham Gas Department.

(*b*) *Gas Purification Practice* (six lectures), by Mr. H. Hollings, Chief Chemist, Gas Light and Coke Company, London.

(*c*) *Aeration of Gas Burners* (two lectures), by Mr. J. W. Wood,

Research Chemist to the Joint Research Committee of the Institution of Gas Engineers and University of Leeds.

(II.) REFRACTORY MATERIALS (eight lectures), given by Prof. Cobb.

(IIA.) *Physical Properties of Refractory Materials* (four lectures), by Mr. H. S. Houldsworth, Research Assistant and Assistant Lecturer on Refractory Materials in the University of Leeds.

Thirty-two external students in all attended these courses in addition to the full-time registered students of the department.

DONATIONS.—In November, 1917, the University Council gratefully accepted the offer of Mr. Henry Woodall to provide and erect an experimental coal gas plant at the University in memory of his father, the late Sir Corbet Woodall, D.Sc. The building and plant have been erected on a site provided by the University, and form an adjunct to the Department of Coal Gas and Fuel Industries. The whole plant has been specially arranged for experimental work, and is not simply an ordinary gas plant on a reduced scale. It has been erected to the designs of Mr. J. F. Scott, A.M.Inst.C.E., of London.

The willing co-operation of friends in the Memorial has made it possible to erect a much more elaborate plant than was at first contemplated, and to provide a sum for endowment. The five Gas Companies with which Sir Corbet was specially connected—viz., the Gas Light and Coke Company, the British Gas Light Company, the Tottenham and District Light, Heat, and Power Company, the Bournemouth Gas and Water Company, and the Croydon Gas Company—made large financial contributions. Messrs. Humphreys and Glasgow offered a carburetted water gas plant, but found that it was impracticable to make one on a scale sufficiently small to be dealt with in the plant. Mr. A. G. Glasgow therefore gave a handsome donation. The Woodall-Duckham Company gave and erected a setting of vertical retorts specially designed to permit of experimental work. Messrs. Gibbons Bros., Ltd., similarly contributed a setting of horizontal retorts also specially arranged for experimental purposes. Messrs. Clayton, Son, & Co., Ltd., of Leeds, supplied the gasholder, purifiers, and pipe work on most advantageous terms, and also made a handsome gift of money. Messrs. Parkinson and W. & B. Cowan, Ltd., gave a 100-light meter.

The exhauster and air-blowing plant were supplied by the Bryan Donkin Company, Ltd., of Chesterfield, and the gas-fired steam boiler by the Spencer-Bonecourt Company, Ltd. The plant is now receiving trial and use at the hands of the Research Staff for the work of the Gas Investigation Committee.

STAFF.—An addition has been made to the staff in the summer of 1924 by the appointment of Mr. Godfrey Claxton, M.Sc., as assistant to Mr. W. H. Hoffert, Research Chemist to the Joint Benzole Research Committee. Mr. Claxton is a graduate of the University in Chemistry with 1st Class Honours, who has been engaged in post-graduate research work under the Professor of Physical Chemistry.

RESEARCH.—The Gas Research Fellow, Dr. S. Pexton, continued during the session the study of the conditions of the gasification of coal and coke in steam, which has been in progress in the department for some years. The work has an important bearing on the manufacture of water gas from coke. The results were reported to the Institution of Gas Engineers last June. On his appointment to the staff of the Gas Light and Coke Company, London, Dr. Pexton resigned his Fellowship.

Mr. C. B. Marson, B.Sc. (1st Class Honours in Fuel and Metallurgy), was appointed to succeed him, and has been engaged upon the study of the influence of ash constituents on the carbonization process, with special reference to nitrogen and sulphur.

Mr. C. B. Marson, under the direction of Mr. Summers, continued the investigation of the effects of composition of the products of combustion on the scaling of metals—a subject of importance in the selection of fuels for metal-heating furnaces and the working of such furnaces. He presented a thesis on this subject, and the degree of B.Sc. with Honours (1st Class) was awarded to him.

Mr. H. T. Angus, under the direction of Mr. Summers, has investigated the influence of grain size on the hardness of metals; and for his thesis on this subject received the degree of B.Sc. in Fuel and Metallurgy with 1st Class Honours. He was afterwards awarded a research grant by the Department of Scientific and Industrial Research, and has carried the subject further this year; now being registered as a student for the degree of Ph.D.

Mr. J. F. L. Wood, B.Sc., under the direction of Mr. Houldsworth, studied the effect of foreign material on the transformation of quartz during the manufacture of silica brick. For his thesis he received the degree of B.Sc. with 2nd Class Honours.

Mr. C. D. Jennings, B.Sc., under the direction of Mr. Summers, studied the production of metallic coatings resistant to oxidation at high temperatures. For this thesis he received the degree of B.Sc. with 2nd Class Honours.

Mr. S. G. Watson, under the direction of Mr. Hodsman, continued the study of the chemistry of gas purification.

Mr. Houldsworth has continued the study of the thermal expansion and also the changes occurring on heating clays, bauxites, and other refractory materials. The results have been communicated to the Ceramic Society.

Mr. Summers has been engaged upon the study of the thermal expansion of metals and alloys for the measurement of which he has constructed a piece of special apparatus.

The research work of the Joint Committee of the University and the Institution of Gas Engineers has been actively pursued during the year. Dr. Parker and his assistants, Mr. H. Kerr and Dr. A. C. Monkhouse, have continued the study of waste heat boilers attached to vertical retort settings, the results being embodied in the Eleventh Report of the Gas Investigation Committee of the Institution of Gas Engineers. This part of the research staff has now been transferred to Leeds, and is engaged in work upon the Corbet Woodall Experimental Gas Plant.

Mr. J. W. Wood, assisted by Mr. G. B. Howarth, has been examining the injection of air by gas burners: and an account of this subject was embodied in the Twelfth Report of the Institution of Gas Engineers. Mr. Wood is continuing this work at the Meadow Lane Gas Works, where facilities have been provided by the Leeds Corporation Gas Department.

During the session the work of the Joint Research Committee of the University and the National Benzole Association was carried on in the department of Mr. W. H. Hoffert, on the properties of solid adsorbents suggested for use in the recovery of benzole. The results of this and other work have since formed the subject of the Second Report of the Joint Benzole Research Committee.

APPOINTMENTS OF GRADUATES.

F. Allen, B.Sc.	(1) Newark Gas-Works. (2) Assistant Engineer, Bedford and District Gas Company.
H. Robinson, B.Sc.	South Metropolitan Gas Company.
H. H. Thomas, B.Sc.	Assistant Chemist, Liverpool Gas Company.
R. J. Thomas, B.Sc.	(1) Supervisor, Royal Ordnance Factories, Woolwich (Assistant to Mr. W. Newton Booth, Gas Engineer). (2) Assistant Manager, Government Munition Factory, Poona, India.
S. Pexton, Ph.D.	Research Chemist, Gas Light and Coke Company.
H. Hollings, M.Sc.	Chief Research Chemist, Gas Light and Coke Company.
J. A. Scott, B.Sc.	British Gas Light Company, Norwich Station.
H. D. Greenwood, M.Sc., A.I.C.	South Metropolitan Gas Company.
A. Henderson, M.Sc., A.I.C.	E. J. Smith & Co. (Metals), Birmingham.
S. G. Watson, M.Sc.	W. C. Holmes & Co., Huddersfield.
F. C. Tatham, Dipl. Gas Eng.	W. C. Holmes & Co.
C. D. Jennings, M.Sc.	E. & A. Smith & Co., Wire Manufacturers, Cleckheaton.
C. S. Savil, B.Sc.	Metallurgist, Baker & Co., Inc., Newark, New Jersey, U.S.A.
R. C. Taylor, B.Sc.	Chief Assistant Engineer, Singapore Gas-Works.
H. Hellewell, Dipl. F. and M.	Assist. Chemist, Manvers Main Colliery Coke Ovens.
H. S. Fraser, B.Sc. ...	Niagara Electrolytic Iron Company, Inc., Niagara Falls.

GRADUATES (June, 1924).

Master of Science ... ... (M.Sc. and B.Sc.—1st Class Honours)	S. G. Watson.
Bachelor of Science (B.Sc.)—	
1st Class Honours	H. T. Angus. C. B. Marson.
2nd Class Honours	J. F. L. Wood. C. D. Jennings.
Bachelor of Science, Gas Engineering	W. W. Firth. J. A. Scott.
Diploma, Gas Engineering ...	A. M. Wandless, B.A. (Cantab). F. C. Tatham.
Diploma, Fuel and Metallurgy	H. Hellewell.

Mr. S. G. Watson was awarded the Leblanc Medal for the excellence of his work for the Honours Degree in Applied Chemistry.

WORKS FACILITIES AND VISITS.

During the vacation, students have been given opportunities of obtaining works experience; and for these valuable facilities our thanks are due to the following (included are the names of firms who have allowed parties of students and staff to visit their works):

British Gas Light Company, Ltd., Norwich.
Leeds Corporation Gas Department (Meadow Lane and New Wortley).
Bradford Corporation Gas Department.
Hartlepool Gas and Water Company.
Northfleet Gas Company.
Winchester Gas Company.
Whitehaven Colliery Company—Coke Ovens.
J. & H. M'Laren, Ltd., Leeds.
Holman & Co., Camborne.
Manvers Main Colliery Company—Coke Ovens.
Monk Bridge Iron and Steel Company, Leeds.
John Lumb & Co., Glass Works, Castleford.
Stainsby & Lyon, Ltd., Tar Distillers, Knottingley.
Yorkshire Coking and Chemical Company, Ltd., Castleford.

PUBLICATIONS.

Eleventh Report of the Gas Investigation Committee—on Aeration and Injection.

Twelfth Report of the Gas Investigation Committee—on Waste-Heat Boilers.

First Joint Benzole Research Committee—on the Use of Solid Adsorbents.

The Gasification of Coke in Steam, with Special Reference to Rates of Gasification. S. Pexton (Gas Research Fellow) and J. W. Cobb. *Trans. Inst. Gas Eng.*, 1924.

Behaviour of Clays, Bauxites, &c., on Heating.—Parts 7-9. H. S. Houldsworth and J. W. Cobb. *Trans. Eng. Ceram. Soc.*, 1923-24, 23, 279.

Influence of Rapid Cooling on the Reversible Expansion of Fireclay. H. S. Houldsworth. *J. Soc. Glass Technology*, 1924, 8, 30.

I should like, in closing this report, to refer once more to the excellent character of the work which has been carried through in both teaching and research by the members of my staff, with special acknowledgment to Mr. H. J. Hodsman, the lecturer in Gas Chemistry.

EUROPEAN GAS COMPANY, LTD.

Annual General Meeting.

The Annual General Meeting of the Company was held at the offices, Montague House, Devonshire Square, E.C., on Tuesday, July 7—Dr. CHARLES CARPENTER (the Chairman) presiding.

The GENERAL MANAGER and SECRETARY (Mr. F. Eliot Williams) read the notice convening the meeting, the accounts for the year, and the Auditors' certificate.

The CHAIRMAN, on rising to address the shareholders, said that he must at the outset refer to the death of his predecessor in the chair—Mr. Henry E. Jones—whose association with the undertaking, as the report reminded them, had been a very long one. For eleven years Mr. Jones had been Chairman; and they were years of excessive difficulty, comprising a period of war and post-war conditions. Many of the troubles through which the Company had been passing arose out of the war, and out of the results of the war; and they owed a great deal to Mr. Jones for the ability of the Company to cope with those difficulties. This ability might be traced largely to the fact that for 28 years Mr. Jones was associated with the Company, mainly in an advisory engineering capacity. In alluding to his lamented death, he did not think he could do better than read the resolution on the subject passed by the Board, and ask those present, by their silence, to express their approval thereof. The resolution was in the following terms:

> The Board of the European Gas Company, Ltd., have received with the deepest regret the news of the death of their Chairman, Mr. Henry Edward Jones. They desire to place on record their high appreciation of the services he had rendered to the Company during a period of nearly twenty-eight years, as Consulting Engineer, Director, Deputy-Chairman, and, since 1914, as Chairman. His Chairmanship included the period of the great war, which was the most difficult in the Company's history; and his energy and wise administration largely contributed to the successful manner in which the Company passed through the war and the subsequent period of economic stress.
>
> His colleagues desire to express their deepest sympathy and condolence with the family in the irreparable loss which they have sustained.

The report reminded them of the position with regard to the franc, which, of course, had a very important bearing upon the affairs of the undertaking. At March 31, 1924, the franc stood at something like 78; while at the corresponding date this year—this was the date to which the books were made up—it stood at 89 to the pound. The fluctuations had been very much less than had been the case in some preceding years; but they were sufficient to interfere with the Company's business. Since the close of their financial year, the franc, as the shareholders were probably all aware, had gone on depreciating; and the movements had been emphasized, on more than one occasion, by very considerable fluctuations. Until the franc became stabilized, there was bound to be a good deal of uncertainty, particularly with regard to the value of the stocks; but in order to counteract as far as possible the effect of these irregularities, the Board proposed, as opportunity offered, to build up a reserve. The next point with regard to the accounts was that they took last year from general revenue, in order to pay the dividend recommended, £21,932; while this year they could put back the sum of £23,919, which brought the general revenue to £37,436—that was, assuming that the proposals of the Board on the present occasion with regard to dividend were agreed to. There was one item in the accounts which was a new one, and this referred to a loan from the Company's bankers of £39,000. This arose from two causes—partly through the increased expenditure of capital which was the result of an increasing business, and partly through the provision of new fittings, which were also called for owing to the fact that the business was an expanding one.

Then, with respect to the capital account, he must also remind them of what he was sure had been referred to on other occasions—that there was an obligation upon the Company in connection with their largest concession to transfer the works in the course of the next ten years from their present position in practically the heart of Nantes to a site nearer the sea, lower down the river, and much more favourably situated as regarded the receipt and unloading of coal. This arrangement was part of the concession, and was one which they would have to honour; but it would involve considerable capital expenditure. While this removal of the works was in contemplation, he might point out that a more or less extensive portion of the present site would be reserved for the handling and marketing of coke and dealing with the big and exceedingly complicated business of the supply of gas to the consumers—the provision of the necessary appliances for the maintenance of stoves, meters, burners, and so on: It was not intended to get rid of the whole of the site, but to utilize it partially for the purposes of the business in the manner he had indicated.

Further with regard to the question of the value of the franc—which was an all-important factor to them, and one which had made so great a difference in the position occupied by the Company now as compared with pre-war years—it had been stated at a previous meeting that a variation of 1 fr. in the rate of exchange represented about £3000 to the Company. This was true while the exchange remained within certain limits; but at the present figure of round about 100, the depreciation was less, and a variation of 1 fr. was equivalent to about £2000—still a very substantial sum. In connection with this matter of exchange, so far as one could see there did not appear to be any likelihood of an alteration for the better until the franc became stabilized at some figure. Also it had to be borne in mind that any efforts made by France in the direction of stabilizing the franc would be largely based on increased taxation; and the Company, in common with other similar undertakings, could not expect to be left out of account when this increased taxation was put into effect. So that what they gained in one way, would to some unknown extent be counterbalanced by additional taxation.

Another point which had been fairly fully dealt with a year ago, but which he would remind the shareholders of now, was that in the pre-war concessions there were definite prices fixed for gas, with various discounts to the authorities for public lighting, which were part and parcel of the concession. When, however, the war came, and the great upheaval took place, the matter of these concessions had to be re-considered; and owing to the disturbed state of labour and of the residual and coal markets, it was found impracticable to fix any definite prices for gas. So the course which had to be followed in the case of the concessions of this Company was that which had already been adopted with regard to the concessions relating to other undertakings in France; that was, the devising of a formula which took into consideration the prices of coal, labour, and residuals. These were the most important factors; and variations in the price of gas were provided for based upon duly certified statements of the figures relating to these three items. As a matter of strict accuracy, the factors were somewhat different in the case of each undertaking. They were the subject of bargaining with the various municipalities, and to some extent minor departures were made; but the principle remained the same in all of them—coal, labour, and residuals. The consequence of this was that one did not know, except as the result of the past three months' operations generally—though in some cases it was six months—what the future price of gas would be. The price of gas (say) from July 1 depended upon the results of working of the previous three or six months, as the case might be. The price determined upon could not follow immediately after July 1, because it took a certain time for the accounts to be made up and certified; but that was the principle. As the consumption was not equal in the various quarters of the year, there was an element of uncertainty arising from this cause. It was obvious that if the consumption each quarter was equal the effect would not be different in any quarter; but if the consumption was unequal—and this was, as he had said, the case—the effect on the Company varied according to whether the new price affected an increased-consumption quarter or a reduced-consumption quarter. What happened was that with a rising market the gas price lagged behind the price of materials, while with a falling market the converse was the case.

The shareholders might ask him why it was that the results of the past twelve months differed from the previous ones. It arose from several causes. Income-tax and corporation profits tax together were considerably down. Coal, also, was very largely down, while residuals were up. This was not a very general state of things, but the first step towards a depreciated residuals market was frequently a fall in the price of coal. Then after a time—not immediately—residuals took the same course. Gas and gas fittings rentals were up by a very substantial amount. During part of the year the Company received gas prices based upon a high price of coal, due to the high rate of exchange ruling from January to March, 1924; whereas coal was being paid for with the exchange rate of the franc at a much lower figure. Also during three months of the year Nantes benefited by having the full formula price. On the other hand, taxes abroad were up, and all London charges were heavier in francs, owing to the higher average rate at which the conversions were made. These details would make clear some of the difficulties with which the Company were faced in dealing with a business carried on in France under existing conditions.

As regards the current year, the Company should still gain something by the fall in the price of coal. On the other hand, the value of coke and other residual products was now very rapidly on the downgrade. How much this would set-off the benefit derived from the reduced price of coal, it was impossible to say. Then, finally, there was the exchange value of the franc, which had suffered very serious depreciation since the date at which the accounts before them were made up. He might point out to them, in passing, that the value of the franc affected them in two ways. They were affected by the value of the franc at the time the money was produced in France and was transferred to this country; and they were affected by the variation in the value of the stocks brought about by the fluctuating value of the franc. Suppose their stocks were identical in amount at the beginning and the end of the year, in the one case they might be valued at 75 frs. to the pound, and at the close of the year at 100 frs. This would leave them no other course than to write-down the values; and the mere fact of having to do this must seriously affect the profits for that particular year.

Next, perhaps, he ought to say something with regard to the settlements which had taken place with the various municipalities. As the shareholders could imagine, the negotiations had been a long time in hand, because they had necessitated a thorough re-consideration of the Company's relationship with the municipalities; but the Directors believed that the formula under which they were now working, the effect of which he had just explained, would put the undertaking on a fair working basis in the different towns. The report made reference to the fact that under the new contracts their concession would expire at Havre in 1970, and at Nantes in 1978. The new contracts which had been made in most cases included a prolongation of the concession. He would like to mention, too, the important and gratifying fact that, although there had naturally been discussions and difficulties from time to time in dealing with the municipalities on these matters, and those difficulties of interpretation, and so on, had by no means disappeared, in every case the Company's relationship with the municipality was an exceedingly happy and cordial one. This was an important point to bear in mind, and should prove a source of great satisfaction—particularly when they considered how widely apart were the towns and cities they supplied. He thought this happy relationship arose from the fact that during the Company's long association with these municipalities, a strong belief in the good faith of the Company had grown up. The Company had been very fortunate in the various representatives who had from time to time looked after the Company's interests at the head of their business in the different towns. As he had already explained, the Nantes contract had associated with it an obligation to transfer the works to a site which was acquired before the war.

Another important point was with regard to the consumption of gas, which went on increasing. It was a very satisfactory state of affairs that in the past year, as compared with the previous twelve months,

the increase in the consumption of gas over the whole of their undertaking should have been 5·58 p.ct., and that this increase in consumption should have been associated with a growth in the number of consumers. In both ways their business was expanding, and this in spite of the high price at which gas was sold in France. When reflecting on the working results of the Company, it was necessary to remember that the cost of gas had increased to between three and four times what it was in 1914. The statistics relating to the consumption of gas in France were very interesting. They showed that the average consumption per head was not the same there as it was in England. There were two reasons which might be advanced in explanation of this. One was that there had not, perhaps, been such a great endeavour made to extend the use of gas over there as here; and the other was that the habits of the people were more careful and thrifty, and that they still looked upon gas as something of a luxury, *plus* necessity. Even in Paris the consumption per head was considerably lower than in the United Kingdom. Their own Company's figures came out very well when compared with a city like Paris, where one would consider that favourable conditions for a gas undertaking obtained. There had not so far been a great deal done in France in the way of domestic heating by gas, closed stoves being mostly in use; but efforts were now being made to bring the advantages of gas fires before the public, and with a fair amount of success. Gas cooking was popular there, probably for the same reason that so largely influenced matters here—that the domestic servant question needed solution. On the other hand, there was the increased competition of electricity, which he could not imagine would diminish, with the extended use that was being made by France of her water power. The competition was much keener in connection with gas lighting; and the Company had been compelled to do what they could to meet it. This they did by fitting-up examples of the latest developments in incandescent gas lighting. In several towns they had obtained the permission of the municipality to select an important thoroughfare and equip it with incandescent gas lighting of the most modern type—sometimes high pressure and at others low pressure, but in either case giving results very much better than had formerly been obtained. By this means they demonstrated to the municipality what could be accomplished in the way of improved lighting of the streets. Of course, the difficulty they were up against was that the municipalities had not got much money to spend; but the Company had provided an example to show them what could be done when the authorities found themselves in a position to extend their lighting. At the same time, it was a good advertisement for gas. Public lighting was one of the best advertisements that any undertaking could have, because it showed everybody what could be done in the way of illumination by gas.

The great difficulty with which the Company were faced in regard to their plant arose from the conditions of the mains. The type of main which had been most popular in France as long as he could remember—which dated back a good many years—was one made of sheet iron covered with asphalt. Mains of this kind had been extensively used in all the cities and towns of France. If they imagined a sheet of iron covered with asphalt, which afforded a certain amount of protection, he thought they would agree that one could not expect the life of a main of this kind to be so long as that of a cast-iron main. Cast iron was not only less liable to be affected by soil conditions, but it was also very much thicker, owing to its method of manufacture. Well, in their own case these wrought-iron asphalt-covered pipes appeared mostly to have come to the end of their life. Probably the erection of the majority of their works and the laying of the mains were carried out within a comparatively short period of time; and so the pipes might be expected to reach the end of their life at somewhere near the same time. In many cases, he believed, they had already passed the limit of durability. Conditions arising out of the war, increase of traffic, &c., had not improved matters. Therefore they were faced with the fact that a good deal of money would have to be spent on replacing these mains by cast-iron ones. But this was not a work that could be carried out all at once; it must be extended over a certain period of time. They were, however, getting on with it as rapidly as they possibly could. One of the effects, the Directors hoped, would be that the present high figure for leakage and unaccounted-for gas—the two things were not quite the same—would be reduced to more reasonable proportions. The report told them that the works and plant at the stations had been maintained in a state of efficiency. One of the advantages that the Company were enjoying at the present time was that under the Consulting Engineership—if he might so express it—of Mr. Harry Jones, the works had been largely re-modelled, and re-modelled on something like modern lines. The Company, in respect of the results they were getting, were in a good position. That was to say, the carbonizing plant was of a modern type, and machinery had been provided in suitable positions.

There was just one other matter to which he would like to refer before he sat down, and that was an all-important one. If they would look back at the history of the Company as indicated by the dividend payments, they would see that since the first two years of the war the dividend had not exceeded 5 p.ct. On one unfortunate occasion they did not pay anything, and on one or two others the payment had been less than 5 p.ct. He did not think he would be doing his duty if he failed to inform the shareholders that he could not imagine that the financial position was likely to improve in the near future, at any rate as far as one could see. At present, therefore, they would have to be contented with a dividend of somewhere about the existing rate of 5 p.ct.—unless something happened which was not in prospect just now. He himself could find nothing which would justify any other course. Bearing on this there was the point with which he had been dealing—the price of gas in France. Gas was already charged at between three and four times what it was during the war; and even if their concessions allowed them to levy higher charges still, he believed that with such higher charges it would be impossible to maintain the gas consumption at anything like the present figure. Thus they would, figuratively speaking, be killing the goose that still laid golden eggs, even if these eggs were smaller than in pre-war days. He concluded by moving the adoption of the report and accounts.

The Deputy-Chairman (Mr. Frank H. Jones) formally seconded.

The Chairman, replying to questions, said the Company purchased their coal partly in Durham and partly in France. It was a question as to how they could get the coal delivered at the different works at the lowest price. In this respect they followed the procedure of the Paris Gas Company, who probably bought even to-day more English than French coal. Where the works were conveniently situated in regard to the mines, it was possible to get coal at a lower figure in France; and in such a case they took French coal. The price of gas took into account the price of coal, so that in one sense, as the coal was mostly purchased in England, it was indirectly—but not directly—based upon the rate of exchange. The factors really governing the price of gas were, as he had already explained, coal, wages, and residuals.

The resolution was then put to the meeting, and carried unanimously.

Proposed by the Chairman, and seconded by the Deputy-Chairman, it was resolved:

> That the interim dividend of 4s. per share paid on the 31st of January last, less 5d. per share for duty in respect of all shares held in France, is hereby confirmed. That a final dividend for the year ended the 31st of March last at the rate of 6s. per share be now declared; such final dividend on all the shares of the Company to be paid on the 1st of August next, the whole out of interest and profits and free of income-tax, subject, however, to a deduction for French stamp and transfer duty of 8d. per share in respect of all shares held in France.

The Chairman moved separately, and they were unanimously passed, resolutions re-electing as Directors of the Company Mr. F. H. Jones and Mr. W. G. Bradshaw, and confirming the election as a Director of Mr. A. M. Paddon. He said that Mr. Jones was an exceedingly useful member of the Board. He was not only a good administrator, but possessed a first-rate knowledge of the technics of gas undertakings. Mr. Bradshaw, also, had had many years' experience of the gas industry, and was an exceedingly valuable Director. As to Mr. Paddon, his election to the Board took place as the result of the death of Mr. Jones, and was decided upon after very careful consideration by the Directors. The Company had a great asset in Mr. Paddon, because he was associated with gas undertakings—in most cases as Chairman—both at home and abroad, and so brought to their counsels a knowledge not only of English practice, but of what was done in various other parts of the world.

The Auditors (Messrs. G. C. Goldsmid and W. B. Brady) were re-appointed, on the proposition of Mr. W. Holt, seconded by Mr. E. F. Donne.

The Chairman said the pleasant duty now fell to him of proposing that the best thanks of the meeting be given to the staff of the Company in London and abroad for their services during the past year. With some knowledge of the subject, he could say that the Company occupied an exceptional position with regard to their staff. The more he saw of them the more pleased he became with their special characteristics and abilities. They owed very much to them, for the admirable manner in which they had carried out their duties. What he had said referred to those both at home and abroad—from the Managers at the various stations downwards. As the older type of Manager had left their service, they had had to rely upon younger men; and these younger men, he was glad to say, were giving an excellent account of themselves, and would prove in the future very valuable additions to the staff. In many cases, too, the good feeling towards the Company evinced by the Chiefs over in France was shown right through the ranks, to the mechanics and stokers. At any rate, this was the impression that he had gained from going about the different works.

The Deputy-Chairman said he would like to do more than merely formally second the proposal. Knowing the staff, he knew how thoroughly they deserved all the nice things the Chairman had uttered about them. He cordially endorsed, therefore, everything that had been stated. He regarded them both as loyal officers and personal friends.

The vote was heartily accorded, and suitably acknowledged by Mr. Eliot Williams.

Carlisle Gas-Works Results.

In his annual report of the working of the Carlisle gas undertaking, Mr. J. E. Blundell, the Engineer and Manager, states that, though the gas output for 1923-24 created a record, yet it was short of this year's figure by over 38 million c.ft. During nine months of the year under review gas has been sold at 6d. per 1000 c.ft. less than the preceding year; the present price being 3s. 6d. per 1000 c.ft. The net profit amounts to £2080. The total quantity of gas sold during the year was 457,779,300 c.ft.—an increase of 8·55 p.ct. on the previous year. The quantity of coal carbonized during the year was 25,645 tons. The number of ordinary consumers is 5357, and there are 8293 prepayment consumers. The gas appliances fixed during the year 1924-25 were as follows: Fires, 768; cookers, 996; grillers, 19; radiators, 9; water heaters, 290; and pendants, 10—a total of 2092.

New Plant at Dublin.—New plant is being introduced by the Alliance and Dublin Consumers' Gas Company in their works at Pearse Street, Dublin. This includes a vertical retort installation of the Glover-West "Leigh" type of a capacity of 4 million c.ft. per day, with coal and coke handling plant, and a four-lift spiral-guided holder (capacity 3 million c.ft.) by Messrs. R. & J. Dempster, Ltd., of Manchester.

Price of Gas at Newtown.—The Newtown Urban District Council have decided to reduce the price of gas from the next reading of the meters, as follows: To prepayment consumers, from 1s. 8d. to 1s. 6d. per therm; to ordinary consumers, from 1s. 4d. to 1s. per therm; to power consumers, from 1s. 4d. to 1s. per therm. The proposed reduction will cost the ratepayers about £300. It was also intimated that there would be a deficiency on the gas-works this year of £836.

PRESENTATION TO MR. W. S. HADDOCK.

There was a demonstration of good feeling and esteem for Mr. W. S. Haddock, the retiring Manager of the Warrington Gas Department, on June 30, when a presentation of a mahogany clock was made to him at a gathering of the staff and employees at the Longford Works. Mr. A. Cook, who has been appointed to succeed Mr. Haddock, and who has acted as his Assistant for some years, occupied the chair.

Mr. COOK said it had been felt by the staff and employees who had worked under Mr. Haddock that it would be an appropriate thing to make a presentation to him on his retirement, as a mark of the respect and esteem in which he was held. He (the speaker) heartily associated himself with all concerned in the matter. He had now been working with Mr. Haddock for over six years. The presentation had taken such a form that it would be a constant reminder of the pleasant associations. They trusted that he would live long and enjoy good health, retaining happy memories of past experiences in the pursuance of his duties over a long period. During his tenure of the position of Manager of the Gas Department, many very difficult problems in the manufacture and distribution of gas had had to be faced; and Mr. Haddock had faced them well and successfully.

Mr. WALTER CATTERALL, speaking on behalf of the employees at Longford, said Mr. Haddock's acts of kindness in giving advice and assistance were well known to many. They all hoped he would be spared for many years to come.

Mr. JAMES DOBSON, on behalf of the clerks at Mersey Street and Longford, referred to Mr. Haddock's unostentatious and simple manner, his singleness of purpose, his firm opinions, and his high integrity. Though it was against Mr. Haddock's inclinations, they could not part without recognizing his splendid example of service.

Mr. ALFRED CLOUGH spoke briefly as the representative of the fittings and mains department.

Mr. G. DALE, Chairman of the Gas Committee, who made the presentation, remarked that there were few men who had gained the distinction of having worked for a department of a corporation for approximately fifty years. Mr. Haddock had not only done this, but he had come through that period with something approaching the vigour of his youth.

Mr. HADDOCK, responding, said he could not adequately express his feelings at what the workmen had done in making the presentation to him. He appreciated very greatly the good feeling shown towards him. He added that he would like to mark his departure by making a present to the employees of £50, to be invested. The interest would go towards helping their sport—bowling, fishing, or gardening.

SOUTHPORT ANNUAL REPORT.

The report on the working of the Southport Corporation Gas Estate for the year ended March 31 (submitted by Mr. John Bond, the Gas Engineer and Manager) states that the increase in the consumption of gas amounts to 20,390,300 c.ft., which is equivalent to 3·08 p.ct. when compared with last year's figures. The prepayment system amounts to 18·57 p.ct. of the gas supplied. This shows an increase of 1·08 p.ct. over last year. The average price received for all gas amounts to 2s. 10·48d. per 1000 c.ft., as compared with last year's average of 3s. 4·04d.

The net capital indebtedness at March 31 was £121,781, which is equivalent to 3s. 6·8d. per 1000 c.ft. of gas sold, as against 3s. 4·2d. for last year. The gas estate has passed through a somewhat difficult year, as the markets for both buying and selling have in no sense of the word been stable. The gross profit amounts to £15,131; and after paying interest and sinking fund charges of £14,482, there remains a balance in hand of £649 to be carried forward to next year's accounts. During the year a new coke hopper of reinforced concrete has been erected, and this is capable of holding 500 tons of coke. The plant, besides acting as a storage for coke, also effects the screening of the material before it is loaded up for sale. In connection with the hopper a complete new telpher plant has been purchased from Messrs. Strachan & Henshaw, of Bristol. A new set of purifiers has been erected in connection with the carburetted water gas plant, and this has been fitted with the latest design of Weck change valve. The removal of the lids can be readily effected by means of two light cranes. The Gas Department have also fitted two new exhausters in connection with the plant, and have renewed the crown of the relief gasholder. For the complete purification of coal gas, one luteless purifier has been erected by Messrs. Clapham Brothers, of Keighley, and foundations are being prepared to receive two further purifiers.

During the year the Gas Committee organized an exhibition in the Cambridge Hall. This exhibition was very successful, and the Gas Department have obtained as a result orders for well over 1000 gas appliances, consisting chiefly of cookers, fires, and water boilers.

Summary of Gas Made and Sold.

	C.Ft.	C.Ft.
Gas made		733,070,000
Gas sold—private consumers	625,291,600	
Gas sold—public lamps	57,491,900	
Gas supplied free	135,700	
Gas used at works, offices, &c., and temperature corrections	24,000,000	
		706,919,200

Newry Gas Profits.—The Newry Gas Committee have devoted £1700 from last year's profits of the undertaking towards the Urban Council's scheme for building 42 workmen's houses. The price of gas has been reduced to 5s. per 1000 c.ft. The concern is making steady headway.

GAS REGULATION ACT APPLICATIONS.

The following notice has appeared in the "London Gazette" regarding an application to the Board of Trade under the Act.

SPECIAL ORDER.

Lea Bridge District Gas Company.

To increase the borrowing powers of the Company, to make further provision as to reserve funds and application of profits in excess of authorized dividends, and for other purposes.

METROPOLITAN GAS COMPANIES' OFFICIAL TESTINGS.

The Gas Referees' reports of the official testings for the past quarter give the following average calorific values for the gas supplied by the Metropolitan Companies named:

Brentford Gas Company.—502 B.Th.U. (declared calorific value, 500 B.Th.U.).

Commercial Gas Company.—480·7 B.Th.U. (declared calorific value, 475 B.Th.U.).

Gas Light and Coke Company.—502·8 B.Th.U. (declared calorific value, 500 B.Th.U.).

South Metropolitan Gas Company.—563·6 B.Th.U. (declared calorific value, 560 B.Th.U.).

South Suburban Gas Company.—501·4 B.Th.U. (declared calorific value, 500 B.Th.U.).

Tottenham District Light, Heat, and Power Company.—503·4 B.Th.U. (declared calorific value, 500 B.Th.U.).

Wandsworth, Wimbledon, and Epsom District Gas Company.—473·9 B.Th.U. (declared calorific value, 470 B.Th.U.).

MORECAMBE GAS DEPARTMENT AND LOCAL PLUMBERS.

Considerable difficulty has been experienced by the Morecambe Corporation Gas Department, due to complaints from the local Master Plumbers' Association to the effect that the Department are infringing upon their rights by fixing gas-heated water apparatus, external fittings, and other appliances, which they claim is the work of the Association. The matter was brought to a head when the Gas Committee consented to interview the Association, who, among other demands, insisted that the Department should not fix any interior fittings or gas-heated water apparatus—and, in fact, resented the Corporation having a showroom for the sale of gas appliances on the ground of municipal trading. The Chairman of the Committee (Mr. J. C. Wilson), at the last meeting of the Council, stated that they had gone very thoroughly into the matter and considered the report of the Engineer (Mr. T. A. Barratt), and had passed the following resolution. "That this Committee inform the Master Plumbers' Association that it reserves the right to trade in and fix gas appliances in connection with the gas undertaking and gas consumers, in the interests of consumers." The Council unanimously approved the action of the Committee on the statement of the Chairman, who submitted that, in the interests of the gas consumers and public health generally, the Department should have sole control of all consumers' gas appliances, and protect them against the purchase of cheap and inferior fittings, and, finally, exercise their powers in the supervision of work done. The Corporation had a grave responsibility to shoulder, which had become greater in recent years, by the increased use of gas.

SMETHWICK COUNCILLOR'S COKE CONTRACTS.

Mr. Hollis Walker, K.C., held an inquiry at Smethwick last week into the circumstances connected with contracts entered into by Messrs. S. W. B. Stephen & Co. and the firm of E. O. Whitehouse with the Corporation, and matters having relation to the recent disqualification of Mr. S. W. B. Stephen as a member of the Town Council.

The Secretary and Manager of the gas-works stated that there was great need for a stock of coke to be cleared to make room for new works; and an appeal was made to Mr. Stephen to help them. In 1922 there was a loss on the gas-works of £10,000. The next year, when Mr. Stephen was Chairman of the Gas Committee, there was a profit of £30,000; in 1923-4, £25,000; and last year, over £8000. Mr. Stephen said he knew that it would be wrong to sell to the Corporation, but it never occurred to him that it would be wrong to buy from them. The President appealed to Alderman Pinkney, who was Chairman of the Gas Committee at the time; and the Alderman said he made an investigation into the E. O. Whitehouse affair, and believed that everything that was explained to him had been unfolded during the inquiry, with the exception of the financial side. The rumour was, he said, that "E. O. Whitehouse" was none other than Councillor Stephen; but as the result of his own investigation at the time, he reported that the rumour had no foundation in fact.

The President said it would have been noticed—and, indeed, the minutes of the Gas Committee made it clear—that in March and April, 1922, while Alderman Pinkney was still Chairman, the undertaking was anxious to get coke out of the way, there being reconstruction in progress.

Alderman Pinkney further stated that he had known all along that Mr. Stephen had been buying coke; but it was in a small way. The President inquired if he knew that it was not a proper thing for a member of the Council to be buying coke any more than it was to be selling coal, or whether he was one of those who saw a distinc-

tion between buying and selling. Alderman Pinkney confessed his ignorance on the matter.

The President said that perhaps the inquiry, if it did no other good, would have taught Smethwick one legal doctrine—that doing business included buying as well as selling. It would be his duty to report in writing to the Corporation.

UCKFIELD GAS AND ELECTRICITY BILL.

This Bill was ordered to be reported for third reading by the Unopposed Committee of the House of Commons, presided over by Mr. JAMES F. HOPE (Chairman of Ways and Means) on Tuesday, July 7. Its purpose is to dissolve the Uckfield Gas Company, Ltd., and to re-incorporate it as the Uckfield Gas and Electricity Company (see "JOURNAL" for Jan. 28, p. 210, and May 13, p. 476).

Mr. J. R. FOX (Messrs. Torr, Durnford, & Co., Parliamentary Agents) said that the existing non-statutory Company had supplied gas in Uckfield (Sussex) for upwards of sixty years. It was registered in 1858 under the Joint Stock Companies' Act of 1856. The capital of the new Company was to be £40,000, of which £10,800 was to be called original capital, and was to be allotted to the shareholders of the existing Company, and the balance of £29,200 (additional capital) it was proposed to apply to gas-works and electricity purposes, as required. The capital would be raised separately for the gas and electricity undertakings. It was proposed that the gas capital should be on the sliding-scale basis, and that the standard dividend should be 7 p.ct. on both the original and additional capital, though it would have been more in accordance with the usual practice if 10 p.ct. had been asked for on the original capital. The slide was to be 5s. p.ct. for every 0·2d. per therm increase or decrease in the price of gas, and the standard price 1s. 6d. per therm, which was equivalent to the present selling price of 7s. 6d. per 1000 c.ft.

Mr. *Arthur Valon* (Messrs. W. A. Valon & Son, Civil Engineers, Westminster) gave evidence in support of the Bill.

In reply to Mr. R. Richardson (a member of the Committee), who considered that the price of gas was high, Mr. Valon said that in rural areas such as the area to be supplied by this Company gas could be sold at very little less than 7s. 6d. per 1000 c.ft. The coal, which came from Yorkshire, cost 40s. per ton, rail costs being very heavy. It was pointed out by Mr. Richardson that coal could be obtained in the Newcastle area at about 19s. per ton, that there was a big margin between that and 40s., and that the total cost of coal might be less if it was sea-borne. Mr. Valon's reply was that no small gas undertaking in the south-east of England could get coal at less than 40s. If the coal was sea-borne, it would have to be unloaded at Newhaven, and loaded again on to the rail, and the total cost would not be less. He also pointed out that the make by this Company was only 13 million c.ft. per annum, and could not be compared with that of a large undertaking. The price charged by the Company compared well with that of other companies similarly situated.

Sir ERNEST MOON, K.C. (Speaker's Counsel), said that the Board of Trade did not seem very much surprised at the standard price proposed.

Mr. *Valon* replied that no doubt the Board of Trade, who had had many small undertakings through their hands, realized the position.

Replying to further questions, he said he would have no objection to the insertion of a clause providing for the revision of the standard price in ten years, if necessary; but it was pointed out by Mr. Fox that there was already a revision clause in the Bill.

A clause seeking power to create special purposes funds in respect of the gas and electricity undertakings up to 1 p.ct. of the paid-up capital, "including borrowed money," was the subject of discussion. The borrowing powers were limited to half the paid-up capital, and the Company suggested that they should have the same special purposes fund, whether the capital was raised by the issue of shares or by borrowing. Mr. Fox said he could not find a precedent, but asked the Committee to consider it on its merits.

Sir ERNEST MOON said that this was a departure from the model clause, which he had initiated, and he would not like to say that this departure ought to be made without being considered by the Board of Trade.

The words "including borrowed moneys" were deleted for the time being.

With regard to the slide on the gas capital, the Board of Trade pointed out, in a report, that this was usually 3s. 6d. on 7 p.ct. capital, and 5s. on 10 p.ct. capital. Mr. Fox stated that the Company could have asked for 10 p.ct. dividend on the original capital, but had contented themselves with 7 p.ct., and they felt they were entitled to the 5s. slide. There were precedents.

The Committee agreed.

A clause giving the Company power to make specifications as to the material and size of gas pipes between the main and the consumer's meter was allowed by the Committee, though the Board of Trade made the same suggestion upon it as in the case of the Hoylake and West Kirby Urban District Council Bill (see report in this issue).

There are a number of new clauses in the Bill, some of which provide for the protection of the Southern Railway Company and the highway authorities. With regard to the clause giving the Company power to lay pipes for ancillary purposes, a proviso is added to the effect that they shall not break up, under the powers of that section, any main road, or interfere with any county or main road bridge, without the consent in writing of the highway authority, or, if such consent is withheld, without the consent of the Board of Trade. The Board, before giving their consent, shall give the highway authority an opportunity of being heard.

A new clause of particular interest was one inserted by agreement for the protection of the East Sussex County Council. The County Council have been endeavouring to obtain protective clauses in this and the Burgess Hill Water Bill, containing principles to which public utility undertakings were opposed. A conference on mains and highways was held at the National Gas Council's offices on March 12, attended by representatives of gas, water, and electricity interests, when it was agreed that the protective clauses which the East Sussex County Council were endeavouring to insert in the two Bills mentioned be opposed to the utmost, and that the expenses of such opposition were to be borne jointly by the gas, water, and electrical interests. Petitions were deposited by the County Council against both Bills in the first House, but were subsequently withdrawn, the County Council reserving the right to oppose in the second House. Before the Uckfield Bill reached the second House, however, agreement had been reached.

The clause relating to the gas undertaking provides that mains and works laid in any main road or across any county or main road bridge (including the roadway and the approaches) shall be laid in such position and at such depth as the Council may reasonably direct. The notice required by section 8 of the Gas-Works Clauses Act, 1847, shall (except in the case of service pipes, as to which three days' notice shall be given, and in cases of emergency) be not less than fourteen days in the case of a bridge, and seven days in all other cases. The plan required by section 9 is to be delivered to the Council not less than fourteen days in the case of a bridge, and seven days in other cases, before the Company commence to break up a main road or interfere with a county or main road bridge. The Company are not to interfere with the structural part of any county or main road bridge without the consent in writing of the Surveyor of the Council, such consent not to be unreasonably withheld, and may be given upon such conditions, other than a money payment, as the Council may reasonably determine. Nothing in the Act shall interfere with the right of the Council to alter the level of, deviate, reconstruct, or improve any main road in which works of the Company are laid; and the Company shall, with reasonable dispatch after receiving notice in writing, alter the position of their mains or works at the cost of the Council in such manner and to such extent as may be agreed between the Council and the Company. Differences are to be determined by arbitration. Nothing in the Act shall interfere with the right of the Council to remove, alter, rebuild, widen, or repair any county or main road bridge across which works of the Company are carried. In the event of such alterations being carried out by the Council, the Company shall, at their own expense, alter the position of their works as may be agreed, or as determined by arbitration. During the carrying out of the alterations by the Council, the Council shall afford all reasonable facilities for temporarily carrying such works of the Company across any stream or river so as not to interrupt the continuous supply of gas or to diminish the pressure of such supply; and when the alteration to the bridge have been completed, the Company shall have the same rights and powers as they had before. All works of the Company shall be so laid and executed that, so far as reasonably practicable, the traffic on any main road or over any county or main road bridge shall not be impeded. The Company shall pay to the Council the reasonable expenses incurred by them in respect of the reasonable superintendence by the Council of works done by the Company under the provisions of this section. The Council, except in case of negligence, shall not be liable in respect of injury to existing works of the Company in consequence of the use by the Council of a steam roller or other machine in connection with the alteration or repair of any main road or county or main road bridge. Any differences arising are to be settled by an arbitrator to be agreed upon, or, failing agreement, to be appointed by the Minister of Transport.

Another new clause applies these provisions for the protection of the Uckfield Urban District Council also.

With regard to relieving the Company from the obligation to supply gas, the clause recently agreed between the National Gas Council and the railway companies, and now known as the "Pinner" Clause (see "JOURNAL" for June 3, p. 677, Mansfield Corporation Bill), has been inserted.

TRADE NOTES.

Stanton Concrete-Lined Pipes.

The Stanton Ironworks Company, Ltd., have published a new pamphlet in which are set out many of the excellent properties of the Stanton centrifugally concrete-lined pipes.

Seventy-Five Years' Progress.

In a leaflet published by Messrs. Drakes, Ltd., of Halifax, is reproduced a letter written 75 years ago by John Crosthwaite, of the Carlisle Gas-Works, to R. Corteen, of the Douglas Gas-Works, in which an oven of retorts is described. Messrs. Drakes point to the amazing advances which have been made since then in the construction of retort settings.

CONTRACTS OPEN.

Coal.

The Gas Committee of the Marple Urban District Council invite tenders for the supply of gas nuts, peas, slack, &c. [See advert. on p. 185.]

Oxide of Iron.

Tenders are invited by the Gas Department of the County Borough of Salford for the supply of oxide of iron purifying material. [See advert. on p. 185.]

Stores (Mains, Fittings, Mantles, Meters, Coal, Tar Still, Oxide, Cookers, Fires, Refractories, &c., &c.).

Tenders are invited by the Gas Committee of the County Borough of Warrington for the supply of numerous goods covering a period of twelve months. [See advert. on p. 185.]

Tar.

The Gas Committee of the Penrith Urban District Council are prepared to consider tenders for the purchase of the surplus tar produced at their gas-works. [See advert. on p. 184.]

Purifier House, &c. (Work and Materials).

Tenders are invited by the Gas Committee of the Manchester Corporation for the construction and erection of a steel-framed purifier house, also for the work and materials required in the excavating and concreting for house and foundations. [See advert. on p. 185.]

NORTH-EAST COAST COAL TRADE.

From our Own Correspondent.

The market, as is only to be expected, remains firm for prompt shipment, and supplies for the remainder of July are becoming scarce. Most collieries are reasonably well stemmed for the rest of the month. Beyond that, there is, naturally enough, little or no interest at present. Consumers are laying in stocks, where necessary, in preparation for the possibility of a stop next month, but the future, both as regards supplies and prices, is too uncertain to encourage new business.

Wear Specials and best quality gas makes quote about 18s. 6d. to 19s. f.o.b., and are mostly well booked. Seconds are nominally 16s. 6d. to 17s. Durham coking coals are in better demand, and asking 16s. 6d. to 17s. Unscreened bunker coals are in demand for shipment to coaling stations, and 17s. 6d. is asked for best qualities, which are scarce.

The present hardening of the market is, of course, in no way a solution of the coal trade troubles. It is merely the temporary demand for stocking purposes which invariably precedes the time when a stoppage is expected.

COAL TRADE IN THE MIDLANDS.

From our Local Correspondent.

Pressure for particular grades of coal has given a stimulus to colliery quotations. This applies chiefly to householders' requirements, the market having taken on additional activity as the termination of the national agreement draws nearer. Some collieries in the Midlands have advanced their prices by 2s. to 3s. These movements must be interpreted as a signal that they are fully committed as regards those portions of their output which are in special request. They are not a measure of the general market trend. More commonly the course adopted by collieries is to withdraw concessions which they were willing to make a few weeks ago in reduction of the rates nominally ruling. The increased buying of slacks and nuts has been maintained. A development which has grown naturally out of the prevailing uncertainties is the stipulation that prices ruling at date of despatch will apply. This puts merchants in a difficulty, as many of them cannot sell on a like basis. Hard coal suitable for stacking has been briskly called for by some large consumers, so that deliveries are falling behind. But industrialists as a whole remain apathetic. What they say is that they have no money to put into large stocks of coal which may turn out a bad bargain.

At the quarterly meeting of the Midland iron and coal trades at Birmingham last week a very dejected feeling prevailed. Iron and steel prices still tended downwards. Speculation was almost entirely absent.

YORKSHIRE AND LANCASHIRE COAL TRADE.

From our Local Correspondent.

The negotiations between the owners and the miners are, as usual, displaying such a degree of uncertainty that the consumer is placed in the usual dilemma of not knowing whether to accumulate stocks for a few weeks at figures which may be discounted later or to run the risk and await events. From inquiries I find that the situation could not have arisen at a better time than the present. Practically all gas-works are fully prepared for eventualities. Recent contracts for gas coal show a declining market, due apparently to the opinion of collieries that figures may be lower in the near future.

There have been signs that manufacturers would take steam fuel into stock, but only in the case of trading where it is necessary, owing to market conditions, to keep the works going. In other directions the situation is viewed with apathy.

The outlook for shipment has been artificially improved in regard to one or two particular qualities, including B.S.Y. hards and furnace coke; but, generally speaking, there is no alteration in this direction.

Street Lighting in Liverpool.—The Liverpool City Lighting Engineer (Mr. H. Dickenson), in his annual report, states that, irrespective of courts and passages, the total length of roads lighted is about 549 miles. This includes 54⅜ miles (as compared with 38¼ in the previous year) lighted by electricity; 490 miles (as compared with 496 miles) lighted with gas; and 4½ miles by oil.

Decreased Profit at Walsall.—The annual statement of accounts of the Walsall gave undertaking was presented at a meeting of the Town Council last week. The accounts show that the net profit for the year was £6136, compared with £17,192 for the previous year. In his review, the Manager (Mr. Fred Davies) states that the adverse trading conditions are reflected in the total receipts; and though the gas sold shows the gratifying increase of 39 million c.ft., equivalent to 6·5 p.ct., the figures would have been considerably better had trade conditions been more favourable. The total number of consumers increased from 20,393 to 21,612. The receipts per 1000 c.ft. were 3s. 5·6d., against 3s. 9·7d.

Results at Burton-on-Trent.—From the report just issued on the working of the Burton-on-Trent gas undertaking for the year ended March 31, which was presented to a meeting of the Town Council on Wednesday last, it is gathered that the total revenue for the year was £122,739, and the working expenses £101,040; the gross profit being £21,699, and the net profit £2642, as compared with £7284 last year. Mr. Yeomans pointed out that the Committee made a reduction in the price of gas and decided to forego the charge for meter rents, which had meant a loss of £3650 in income. There had been an increase of 2·28 p.ct. in the consumption. They were in a favourable position for meeting a coal strike, as they had 8000 tons of coal in stock, which would last about four months. Alderman King drew attention to the "bright spot" in the report—that the unaccounted-for gas had dropped from 4 to 3 p.ct. The report was approved, and of the surplus £2000 was transferred in aid of the rates.

CURRENT SALES OF GAS PRODUCTS.

The London Market for Tar, Tar Products, and Sulphate.

LONDON, *July* 13.

The market for pitch is not showing much life, and buyers' ideas of value for such business as is offering are on the low side. The price is nominal at about 40s. per ton, in bulk, at makers' works.

In the meantime road tar continues to take up a very large percentage of the production of tar, and makers are working at full pressure.

Creosote is steady with a slightly firmer tendency at about 7d. per gallon net and naked.

Solvent naphtha continues in demand at about 1s. 8d. per gallon for 95-160 quality.

Pure benzole and pure toluole are about 1s. 11d. to 2s. per gallon.

There is a fair amount of inquiry for pyridine bases; to-day's idea of price being 20s. per gallon.

Tar Products in the Provinces.

July 13.

The average values for gas-works products during last week were: Gas-works coal-tar, 26s. to 31s. Pitch, East Coast, 39s. to 40s. f.o.b. West Coast—Manchester, 34s. to 35s.; Liverpool, 35s. to 36s.; Clyde, 38s. to 39s.; Benzole, 90 p.ct., North, 1s. 7½d. to 1s. 8½d.; crude, 65 p.ct., at 120° C., 1s. to 1s. 1d., naked at makers' works; 50-90 p.ct., naked, North, 1s. 7½d. to 1s. 8½d. Toluole, naked, North, 1s. 6½d. to 1s. 7½d., nominal. Coal-tar crude naphtha, in bulk, North, 7½d. to 8½d. Solvent naphtha, naked, North, 1s. 4d. to 1s. 5d. Heavy naphtha, North, 1s. to 1s. 2d. Creosote, in bulk, North, liquid, 5⅞d. to 6d.; salty, 5⅝d. to 5⅞d.; Scotland, 5½d. to 5⅝d. Heavy oils, in bulk, North, 6¼d. to 7d. Carbolic acid, 1s. 5d. to 1s. 6d. prompt. Naphthalene, £11 to £14; salts, £4 to £5, bags included. Anthracene, "A" quality, 2½d. per minimum 40 p.ct.; purely nominal; "B" quality unsaleable.

Bulk Supply at Rawmarsh.—The Rawmarsh Urban District Council lately considered the question of the reorganization of the gas-works, and the offer of the Rotherham Corporation to supply gas in bulk at a price of 1s. 6d. per 1000 c.ft. into the holder. It was decided to write to the Rotherham Corporation stating that the Council could not accept the figure of 1s. 6d., but would be prepared to consider an offer in the region of 10d. per 1000 c.ft.

Ventilation of Glasgow Gas Offices.—Arising out of complaints as to defective ventilation in the offices of the Gas Department of the Glasgow Corporation, a Committee who had investigated the matter proposed to substitute electric lighting for gas. When the minute of the Committee came before the Town Council, Mr. Young held that they should first make the ventilation right, and then they could judge the whole position. Another member thought it would be a reflection on the Gas Department to substitute electric lighting in their own offices, and it might have an adverse effect on the use of gas. Mr. Munro said that, when he visited the offices, the temperature was between 65° and 70° in the middle of the day, and later it rose to 76°. On a division, it was decided, by 47 votes to 13, to substitute electric lighting for the present gas installation.

New Plant at Ramsgate.—The Ramsgate Corporation Gas Committee, on the recommendation of their Engineer, Mr. R. H. Ruthven, have placed an order with the Woodall-Duckham Vertical Retort and Oven Construction Company, Ltd., for an installation of intermittent vertical chambers. The plant will have a capacity of 67½ tons of coal a day. It will consist of 15 chambers, constructed in the highest grade silica material, each chamber being 16 ft. 8 in. long and having a cross-section at the top measuring 7 ft. 10 in. on the major axis and a mean dimension of 9 in. on the minor axis. The bottom of the retorts will measure 8 ft. 3 in. on the major axis and will have an 11⅞-in. mean minor axis. The retorts will be charged every 12 hours. The plant will be built in the present retort house, and will be complete with coal breaking and handling plant and store. There will also be a complete coke handling, screening, and breaking plant, with the necessary storage. The scheme also includes two 40-KW. electric generating units, and a waste-heat boiler which will be capable of raising 900 to 1000 lbs. of steam per ton of coal carbonized. The plant is arranged to allow for an extension of ten further chambers. It is understood that one of the most important factors governing the decision to instal intermittent vertical chambers has been their ability to produce coke suitable for the Ramsgate demands.

Galashiels Gas Light Company.—At the annual general meeting of the shareholders of the Galashiels Gas Light Company, the Directors' report for the past year was submitted, showing that the quantity of gas manufactured during the year was 100,251,500 c.ft., of which 92,779,950 c.ft. passed through consumers' meters—an increase of 930,350 c.ft. After providing for depreciation, the profits for the year amounted to £2470, from which it was recommended to pay the usual dividend of 5 p.ct., free of income-tax. Mr. George Hunter, Chairman, in moving the adoption of the report, said that the trading results on the whole might be considered satisfactory. For the first time in the history of the Company they had supplied over 100,000,000 c.ft. Owing to the depression in the woollen industry, this increase could only have been made in the domestic line. By a weekly advertising scheme the advantages of the latest appliances for heating and cooking had been brought before the public; and this had been of great benefit. A new gasholder had been completed in the latter part of the year. Referring to the accounts, Mr. Hunter said that last year he mentioned that rates, taxes, &c., equalled 1s. per 1000 c.ft. of gas, and that probably this year they would amount to 1s. 2d. That forecast had proved almost correct. They had paid £5472, against £4709 last year—an increase of £763. Here was a small Company limiting the dividend to 5 p.ct., amounting to £25,000, and against this having to find the sum of £5472—equal to about 25 p.ct. of its total income—for rates and taxes alone.

STOCK MARKET REPORT.

THE various stock markets were on the whole much brighter last week. The exceptions, by reason of the labour troubles, were Home Rails and Iron, Coal, and Steel undertakings. The prospect of a satisfactory settlement being arrived at on the points at issue is not outside the bounds of possibility; it being generally conceded that moderate counsels will prevail.

The feature of the week was the activity in Rubber shares, the demand for which reached its highest on Friday. Notices have appeared in the Press, however, warning the public that the improvement in values is due solely to the rapid rise in the price of the commodity, and advising caution.

The gilt-edged market is slowly but surely recovering, and the recent setback in prices has given excellent opportunities to investors. A matter of interest to supporters of Gas Stocks is the attention given to the Synthetic Ammonia scrip, which gained 1½ to 2½ premium. It would appear that the enormous output of this Company will be a serious competitor in the sulphate of ammonia market.

Issue.	Share.	When ex-Dividend.	Dividends. Prev. Hf.Yr.	Dividends. Last Hf. Yr.	NAME.	Quotations. July 10.	Rise + or Fall − on Week.	Transactions Lowest and Highest Prices.
£			%p.a.	%p.a.				
171,978	Stk.	Feb. 5	5	5	Aldershot 5 p.c. max. C.	78—81	..	..
295,402	,,	,,	4	4	Do. 4 p.c. Pref.	71—76	..	..
1,551,868	,,	Apl. 2	6½	6½	Alliance & Dublin Ord.	65—70	..	65
374,000	,,	July 9	4	4	Do. 4 p.c. Deb.	60—65*	−3	..
300,000	1	May 7	1/7½	1/7½	Bombay, Ltd.	1/6—1/7	..	..
170,000	10	Mar. 5	8½	8½	Bournemouth 5 p.c.	12—13	..	..
425,050	10	,,	7	7	Do. B 7 p.c..	12½—12¾	..	12⅞
150,000	10	,,	6	6	Do. Pref. 6 p.c..	11—12	..	..
50,000	Stk.	June 25	3	3	Do. 3 p.c. Deb..	55—58	..	..
162,025	,,	,,	4	4	Do. 4 p.c. Deb..	76—79	..	..
992,045	,,	July 9	6 1/16	6 1/16	Brentford A Con.	93—98*	−2	..
900,500	,,	,,	6½	6½	Do. B New	91—96*	−4	93
76,000	,,	,,	5	5	Do. 5 p.c. Pref.	93—96*	−2	..
306,690	,,	June 11	4	4	Do. 4 p.c. Deb.	75—80	..	..
181,337	,,	,,	6	6	Do. 6 p.c. Rich. Red. Deb.	100—105	..	..
214,740	,,	Mar. 5	12½	12½	Brighton & Hove Orig.	165—170	..	..
244,200	,,	,,	8½	9½	Do. A Ord.	122—125	..	..
1,287,500	,,	Feb. 19	4	5	Bristol 5 p.c. max..	96½—97¼a	..	..
855,000	,,	Mar. 19	8	7	British Ord.	105—110	−4	105—110½
100,000	,,	June 25	7	7	Do. 7 p.c. Pref..	120—125	..	..
120,000	,,	,,	4	4	Do. 4 p.c. Red. Deb.	71—76	+1	..
100,000	10	May 21	6	8	Cape Town, Ltd.	6½—7½	..	..
100,000	10	Apl. 23	4½	4½	Do. 4½ p.c. Pref..	6—7	..	..
150,000	Stk.	June 25	4½	4½	Do. 4½ p.c. Deb..	69—74	..	..
626,860	,,	Feb. 19	6	6	Cardiff Con. Ord.	101—104	..	..
237,860	,,	June 25	7½	7½	Do. 7½ p.c. Red. Deb.	101—104	..	..
157,150	,,	Feb. 19	5	6½	Chester 5 p.c. Ord.	89½—94½b	..	..
1,513,280	,,	Mar. 5	6	5/14/8	Commercial 4 p.c. Cap.	85—88	..	..
560,000	,,	,,	6	5⅞	Do. 3½ p.c. Cap.	84—87	..	..
475,000	,,	June 11	3	3	Do. 3 p.c. Deb.	56—59	..	57½
800,000	,,	14 Jan. 15	—	—	Continental Union, Ltd.	32—37	+2	33—35½
200,000	,,	June 11	7	7	Do. 7 p.c. Pref.	85—89	..	88½
660,000	,,	Mar. 5	6½	6½	Croydon sliding scale	98—102	..	..
284,975	,,	,,	5	5	Do. max. div.	83—86	..	..
492,270	,,	Feb. 19	6	9	Derby Con.	110—112c	..	..
55,000	,,	Jan. 8	4	4	Do. Deb.	74—76c	..	..
1,002,180	1	Jan. 22	6	4	European, Ltd.	7—8	..	7½
16,460,070	Stk	Feb. 19	3½	3½	Gas Light & Coke 4 p.c. Ord.	81½—83½	−½	82—83
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	61—64	..	61—62½
4,062,235	,,	,,	4	4	Do. 4 p.c. Con. Pref.	77—80	+½	78½
4,761,930	,,	June 11	3	3	Do. 3 p.c. Con. Deb.	58—61	..	58½—60½
130,000	,,	—	10	10	Do. 10 p.c. Bonds	..	..	192½
42,000	,,	—	7½	7½	Do. 7½ p.c. Ilford Deb.	..	..	..
82,500	,,	Mar. 19	6½	6½	Hastings & St. L. 5 p.c. Conv.	92—97	..	94½
258,740	,,	,,	5½	5½	Do. 3½ p.c. Conv.	73—78	..	..
70,000	10	May 7	10	10	Hongkong & China, Ltd.	17—18	..	..
86,600	Stk.	Mar. 5	10	10	Hornsey 7 p.c.	136—141	..	..
1,976,000	,,	May 21	10	59	Imperial Continental Cap.	137—142	−1	137—141½
263,950	,,	Feb. 5	3½	3½	Do. 3½ p.c. Red. Deb.	71—74	..	..
235,242	,,	Mar. 19	6½	6½	Lea Bridge 5 p.c. Ord.	96—101	..	..
2,127,340	,,	Feb. 19	5½	5½	Liverpool 5 p.c. Ord.	86—87b	..	..
600,000	,,	Mar. 19	7	7	Do. 7 p.c. Red. Pref.	103½—104½b	..	103—104½
165,736	,,	Feb. 19	9	8	Maidstone 5 p.c. Cap.	122—132	..	..
63,480	,,	June 25	3	3	Do. 3 p.c. Deb.	52—57	..	..
75,000	5	June 25	5	7	Malta & Mediterranean	4—4½	..	..
541,920	Stk.	June 11	4	4	Montevideo, Ltd.	65—69	..	67½—68
2,061,315	,,	Mar. 5	5	5	Newcastle & Gateshead Con.	73—75d	−2	..
300,929	,,	,,	4	4	Do. 4 p.c. Pref.	77—78d	..	75½
529,705	,,	June 25	3½	3½	Do. 3½ p.c. Deb.	67—68a	..	..
15,000	,,	Mar. 5	11	12	North Middlesex 10 p.c.	..	..	116½—116¾
75,940	,,	,,	7 7/10	8⅝	Do. 7 p.c.	..	..	..
300,000	Stk.	May 7	9	7	Oriental, Ltd.	100—105	..	..
188,120	,,	June 25	7¼	7½	Plym'th & Ston'house 5 p.c.	108—113	..	..
60,000	50	Mar. 5	13	14	Portsea Island B	96—99	..	100—100½
100,000	50	,,	12	13	Do. C	93—98	..	..
2,289,909	1	—	—	—	Primitiva Ord.	8/6—9/6	..	8/6—9/1
311,100	100	June 2	4	4	Do. 4 p.c. Red. Deb.	78—80	..	79½—79¾
600,000	Stk.	Jan. 22	4	4	Do. 4 p.c. Red. Deb. 1911	64—66	..	..
320,335	,,	June 25	4	4	Do. B. Aires 4 p.c. Rd. Db.	63—65	..	64—64½
321,670	,,	,,	4	4	Do. R'r P'te 4 p.c. Rd. Db.	63—65	..	..
150,000	10	Mar. 19	6	6	San Paulo 6 p.c. Pref.	7½—8½	..	..
125,000	50	July 1	5	5	Do. 5 p.c. Red. Deb.	42—45	..	..
270,000	Stk.	Mar. 19	5½	5½	Sheffield A	104—106e	..	..
419,968	,,	,,	5½	5½	Do. B	104—106e	..	..
1,047,000	,,	,,	5½	5½	Do. C	104—106e	..	..
90,000	10	June 11	6	4	South African	7—9	..	..
6,609,895	Stk.	Feb 19	5	6½	South Met. Ord.	91½—93½	..	92—93
1,895,445	,,	July 9	3	3	Do. 3 p.c. Deb.	57—60*	−1	..
734,000	,,	Mar. 5	6½	6½	Do. 6½ p.c. Red. Deb.	102½—104½	..	103
91,500	,,	Mar. 5	8½	8½	South Shields Con.	135—136d	..	..
1,187,795	,,	Feb. 19	6½	6½	South Suburban Ord. 5 p.c.	91—94	−1	92½—93½
368,837	,,	June 25	5	5	Do. 5 p.c. Deb.	95—98	..	..
647,740	,,	May 7	5	5	South'mpt'n Ord. 5 p.c. max.	80—83	..	..
121,275	,,	June 25	4	4	Do. 4 p.c. Deb.	70—75	..	..
250,000	,,	Mar. 5	7	7	Swansea 7 p.c. Red. Pref.	102—104	..	..
200,000	,,	June 25	6½	6½	Do. 6½ p.c. Red. Deb.	100—102	..	101—101½
120,000	,,	Feb. 19	8	8	Tottenham District A 5 p.c.	116—119	..	..
882,275	,,	,,	6½	6½	Do. B 3½ p.c.	93—98	..	..
150,000	,,	—	—	—	Do. 5½ p.c. Pref.	103—105	..	..
181,255	,,	June 11	4	4	Do. 4 p.c. Deb.	76—79	..	77—78
258,251	,,	Mar. 19	5	5	Tynemouth Con. and New	74—76d	..	..
					Uxbridge, Maidenhead, &			
197,294	,,	Feb. 19	6½	6½	Wycombe 5 p.c.	95—100	..	..
88,330	,,	,,	5	5	Do. 5 p.c. pref.	95—100	..	..
91,800	,,	,,	—	6½	Do. 5 p.c. Maidenh'd	90—95	..	..
					Wandsworth, Wimbledon,			
					and Epsom—			
30,000	,,	July 9	9½	8½	Wandsworth A 5 p.c.	127—132*	−3	..
355,636	,,	,,	7½	7	Do. B 3½ p.c.	107—112*	−3	..
392,955	,,	,,	6/9/6	5/19/0	Do. C and New	93—95*	−2	..
352,000	,,	,,	7⅝	6⅞	Wimbledon 5 p.c.	102—105*	−4	..
98,000	,,	,,	7⅝	7½	Epsom 5 p.c.	109—112*	−4	..
88,416	,,	June 25	3	3	3 p.c. Deb.	55—58	..	..

Quotations at :—*a*,—Bristol. *b*,—Liverpool. *c*,—Nottingham. *d*,—Newcastle. *e*,—Sheffield. * Ex. div.

In the Industrial Market the popular issues dominated the business. Courtaulds' increased dividend announcement led to a slight improvement in the price of the shares, and, sympathetically, British Celanese and Cellulose were also in demand. Dunlops were lively on reports of the excellent business being done.

Business in the Gas Market was normal. Of the ordinary stocks it will be seen that there was a solitary improvement in the quotations—Continental Union rising 2 points to 32-37. On the other hand, a heavy drop occurred in British ordinary of 4 points to 105-110. Newcastle fell 2 points to 73-75; and Gas Light, Imperial Continental, and South Suburban were also marked down slightly. The usual improvements about this time, in consequence of dividend proximity, seem to be lacking this year.

The following transactions were recorded during the week:

On Monday, British 110½, European 7½, Gas Light and Coke 82, 82½, 82⅝, 82⅞, 3½ p.ct. maximum 62⅜, Imperial Continental 139, 140, 141½, Liverpool 7 p.ct. preference 104¾, Portsea Island "B" 100, 100½, Primitiva 8s. 9d., 4 p.ct. 1st debentures 79½, 79⅞, South Metropolitan 92½, South Suburban 5 p.ct. 93, 93½, Swansea 6½ p.ct. debenture 101, 101⅜ *ex* div. Supplementary prices, Gas Light 10 p.ct. Bonds 192½, Portsea Island 4 p.ct. debenture 75, 75½.

On Tuesday, Alliance and Dublin 65, Continental Union 33, Gas Light and Coke 82, 82⅜, 3½ p.ct. maximum 62½, 4 p.ct. preference 78½, 3 p.ct. debenture 60½, Imperial Continental 130, 130½, 140, Montevideo 67½, 68, Primitiva 8s. 9d., 9s. 3d., South Metropolitan 92½, South Suburban 5 p.ct. 92½, 93¼. Supplementary prices, South Suburban 7 p.ct. debenture 106.

On Wednesday, Bournemouth "B" 12⅜, Brentford "B" 93, British 105, Continental Union 35, Gas Light and Coke 82, 82½, 83, 3½ p.ct. maximum 61, 61½, 3 p.ct. debenture 58⅜, 59⅜, 60, Imperial Continental 137, 138½, 139, Primitiva 8s. 9d., South Metropolitan 92½, 92¼, 92½, 93, South Suburban 5 p.ct. 92½, 93, 93¼. Supplementary prices, Mid-Kent 40s.

On Thursday, Alliance and Dublin 65, Commercial 3 p.ct. debenture 57½, Continental Union 35½, Gas Light and Coke 82⅜, 83, Hastings and St. Leonards 5 p.ct. converted 94½, Imperial Continental 138, Primitiva 8s. 6d., 9s., 4 p.ct. (Buenos Ayres) new debenture 64, San Paulo 6 p.ct. preference 8, 8½, South Metropolitan 92½, 92⅞, Tottenham 4 p.ct. debenture 77. Supplementary prices, Hornsey 5 p.ct. preference 89¾, Romford "B" 8⅝, 8¼.

On Friday, Continental Union 35½, 35⅝, 7 p.ct. preference 88½, Gas Light and Coke 82⅝, 82⅜, 3½ p.ct. maximum 61, Imperial Continental 138⅜, Liverpool 103, Montevideo 67½, 68, Newcastle-on-Tyne 4 p.ct. preference 75½, North Middlesex additional ordinary 116½, 116⅜, Primitiva 4 p.ct. (Buenos Ayres) debenture 64⅜, South Metropolitan 92, 6½ p.ct. debenture 103, Tottenham 4 p.ct. debenture 78. Supplementary prices, Cambridge University and Town 5 p.ct. debenture 95¾, Tottenham 6 p.ct. mortgages 98½, 98½, York consolidated ordinary 69⅜.

In spite of the absence of Treasury Bill maturities, funds were abundant in Lombard Street at the close of the week. The rate for renewing day-to-day loans became 3½ p.ct., while new money was available at from 3¼ p.ct. down to 3 p.ct. There was a sharp drop in the average rate of Treasury Bills, which were allotted at £4 7s. 10·46d. p.ct. against £4 10s. 2·47d. p.ct. a week ago.

Business in the Foreign Exchange Market was quieter towards the close of the week, and fluctuations were within narrower limits. The Paris cheque, although somewhat erratic during the week, closed steadier at 103.62½. Belgian francs closed at 104.05. Sterling on New York was firm, the closing rate corresponding to that of the previous week—viz., 4.86⅜.

The Silver Market was quiet, the price remaining at 32d. per oz. for cash. Gold fell ½d., to 84s. 10½d. per oz.

The Bank Rate is 5 p.ct., to which it was raised from 4 p.ct. on March 5. Bankers' deposit rates are 3 p.ct. The deposit rates of the discount houses are 3 p.ct. at call and 3½ p.ct. at notice.

District Depots at Birmingham.—The Birmingham Gas Department are increasing the number of district depots. Premises have been acquired for a new branch in the High Street at Erdington, a district with 50,000 inhabitants; and recently there was opened a new depot at Acocks Green, another large area. The premises are situated in Warwick Road.

Anstruther Gas Company.—At the annual general meeting of the Anstruther and Cellardyke Gas Company, Mr. David Cook, Chairman, commented on the very satisfactory results of the year's work, and moved that the recommendation of the Directors be adhered to—namely, that they pay a dividend of 6 p.ct., free of tax, on the capital stock of the Company. This was agreed to. Mr. Cook also said it would be noted that it was the intention of the Directors to reduce the price of gas by 5d., making it 5s. 5d. per 1000 c.ft., as from September next.

Profit at Thornton-le-Fylde.—Addressing the Thornton-le-Fylde Urban District Council, Mr. T. Bailey, the Finance Chairman, said that, in spite of a reduction of 6d. per 1000 c.ft. in the price of gas, an increase in coal costs, and a decrease in the selling price of residuals, a profit of £1646 was shown. Of this, £1250 would be contributed to the rate account. They were also setting aside for a renewals fund £216. It was proposed to make an annual subscription to this fund, to replace capital works requiring renewal before the terms allowed for repayment had expired.

Torquay Gas-Works Extensions.—Intimation is made by the Torquay and Paignton Gas Company that they are prepared to receive tenders for the sale of £20,000 of 5 p.ct. debenture stock at a minimum price of £97 per £100, which will be redeemable at par on June 30, 1945. The money is needed to meet the cost of the extension of the works at Preston. These works are being largely reconstructed and brought thoroughly up to date. The authorized stock capital is £190,250, and loan capital £63,416. The accumulated funds of the Company on Dec. 31, 1924, were £57,563.

Borrowing Powers at Stockton.—The Ministry of Health have forwarded to the Stockton Corporation Gas Committee sanction to borrow £10,421 on account of mains, and £13,000 for cookers, fires, and meters. The Corporation have authorized various gas-main extensions at Yarm. The Board of Trade have made a Special Order which refers, among other things, to the transfer to the Corporation of the Yarm Gas-Works, the inclusion in the area of supply of Aislaby, Longnewton, Wolviston, Newton Bewley, Elton, and Yarm, and the price which the Corporation may charge to outside consumers.

Plucky Irish Gas Manager.—Highly-coloured versions have been given by imaginative Press correspondents of a gas explosion at Carrickfergus in which Mr. Robert Campbell (Manager of the Gas Company) and Mr. Gordon Holmes, a plumber and gasfitter, who was assisting him, were injured. The two were making a new connection in Governors' Walk when the explosion occurred. Mr. Holmes was the more seriously burned, receiving somewhat extensive injuries about the arms and body. Mr. Campbell, though burned about the face and hands, with pluck and presence of mind cycled to the gas-works and turned off the supply before having his injuries medically treated.

Origin of a Gas Explosion.—Circumstances which may serve as a warning to others led, at the beginning of this month, to a gas explosion in the Ty Melyn Hotel, Swansea. It was ascertained that brewery employees, when delivering beer to the cellar of the hotel during the day, requested the landlady to provide a light more satisfactory than candles. In order to meet this request a tramway employee, without previously turning-off the supply at the meter, took a blow-lamp into the cellar to make a connection between a live gas pipe and a disused pendant—a distance of 9 in. He went from the cellar to find a suitable piece of piping to make the connection, leaving the blow lamp in full blast; and it was during his absence that the explosion took place. The gas service and meter (the property of the Gas Company) were in perfect condition. Mr. W. H. Johns (the Engineer and Manager) has written to the local Press explaining the origin of the occurrence, for which the Company were in no way responsible, and emphasizing the importance of giving access to the gas supply to no one other than competent tradesmen.

Gas Service in Irish Housing Schemes.—In connection with the erection of several hundreds of workmen's model dwellings under municipal auspices at Marino, Fairview, Dublin, architects and builders have been greatly interested in a house specially fitted-up and equipped to meet the needs of an ordinary working-class family, all modern methods and appliances being used. In this house lighting is carried out by the most up-to-date type of strongly-designed gas fittings and burners. The average cost to the tenant for lighting, heating, cooking, and washing works out at from 3s. to 3s. 6d. per week on the present price of gas in Dublin. All the houses in the scheme will be fitted after this model. The advantage of so excellent a gas service is much appreciated, and thousands of applications have been received from working-class families desiring to become tenants. In the Blackrock (Co. Dublin) Urban District Council's housing scheme at Temple Park the all-gas system has also been adopted; and tenants in occupation have written to the Council in glowing terms of the comfort and convenience which have resulted.

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